SERVICE MANUAL

Standard Horizon PF-P330 Suction-Feed Paper Folder

Read this manual, and thoroughly familiarize yourself with its contents before operating or servicing this equipment.

PF-P330/SM

STANDARD

FOREWORD

Paper Folder PF-P330

Important Information

This service manual is designed to help you to repair and maintain the PF-P330 in order to keep it in good operating condition. Please read and understand the instructions in this service manual before performing any repair or maintenance.

- Horizon International Inc. shall not be liable for incidental or consequential damages resulting from: improper or inadequate maintenance by the customer; unauthorized modification or misuse; or operation outside of the environmental specifications for the product.

- Horizon International Inc. follows a policy of continuing improvement in design and performance of the product. Therefore, the product design and specifications are subject to change without prior notice and without our legal obligation.

- All rights are reserved. No part of the manual may be photocopied, reproduced or translated to another language without the prior written consent of Horizon International Inc.

⚠ Safety Precautions

- Please read and understand all safety instructions with include the terms ⚠ **WARNING**, and ⚠ **CAUTION**. If these safety instructions are ignored, personal injury may result.

- The repair, maintenance and safety instructions in this manual are valid only when the repair or maintenance work is performed according to the procedures described in this manual.

- The term WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- The term CAUTION indicates a potentially hazardous situation which, if not avoided, may result in damage on machines. It may also be used to alert against unsafe practices.

- Horizon International Inc. cannot anticipate every possible situation that might involve a potential hazard. The instructions in this manual and the warning labels on the machine are therefore not all-inclusive.

- All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation, repair or maintenance could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device when it has been locked or tagged out.

- Some of the drawings in this manual show the machine uncovered for explanations of details inside the machine.

Abbreviations

1. Abbreviations for wire colors

BRN	=	Brown	BLU	=	Blue
RED	=	Red	VIO	=	Violet
ORN	=	Orange	GRY	=	Gray
YEL	=	Yellow	WHT	=	White
GRN	=	Green	BLK	=	Black

BRN(#) = the character (#) that follows the wire color indicates the attached gray sticker. The sticker is to identify the wire in case there are two wires of the same color.

RED/BLU = "/BLU"; the color that follows slash indicates the base color of the wire. In this case, the wire is striped red on the blue color.

2. Abbreviations for electrical parts

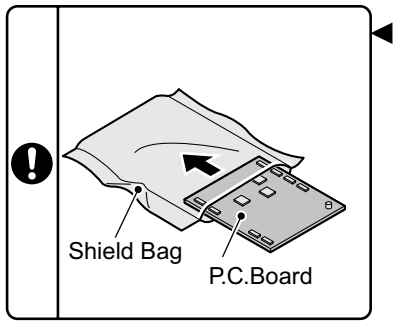
Axx	=	Inverter/Driver	Qxx	=	Circuit Protector/Breaker
Bxx	=	Sensor	QPM	=	(Multi Layer) P. C. Board
Fxx	=	Fuse	QPW	=	(Single Layer) P. C. Board
Gxx	=	Power Supply	S/SWxx	=	Switch
Kxx	=	Contactor	Xxx	=	Terminal Board/Connector
Lxx	=	LED	Yxx	=	Solenoid/Clutch/Brake
Mxx	=	Motor			

3. Other Abbreviations

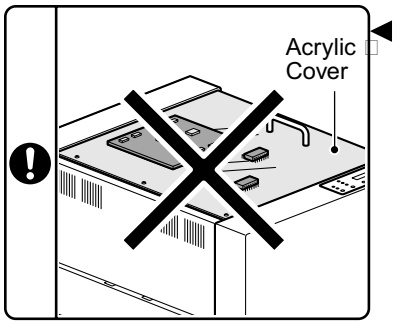
CON	=	Connector	R/VR	=	Volume
DSW	=	Dip Switch	SL/SOL	=	Solenoid
NF	=	Noise Filter	SSR	=	Solid State Relay

Heading Precautions for P.C.Board and ROM

P.C.Board and ROM can be damaged by humanly inperceptible static electricity.
Handle P.C.Board and ROM with following care.



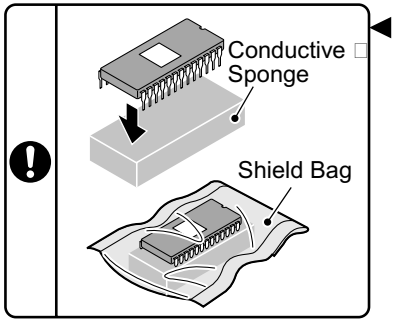
◀ Keep P.C.Board in a shield bag.



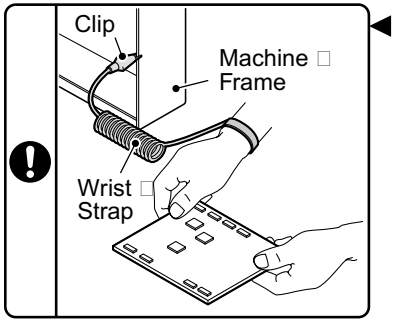
◀ Do not put P.C.Board and ROM on the machine, especially on the acrylic cover. (No problem on the conductive plate.)

And keep the P.C.Board and ROM away from the insulators.

Insulators: Plastic, form polystyrene,
chemical fiber fabric, dry
paper, etc.



◀ Put the ROM on a conductive sponge and keep in a shield bag.



◀ When replacing the P.C.Board and ROM, or setting the dip switches and volumes on the P.C.Board, wear a wrist strap, and connect the clip to the machine frame (not painted surface).

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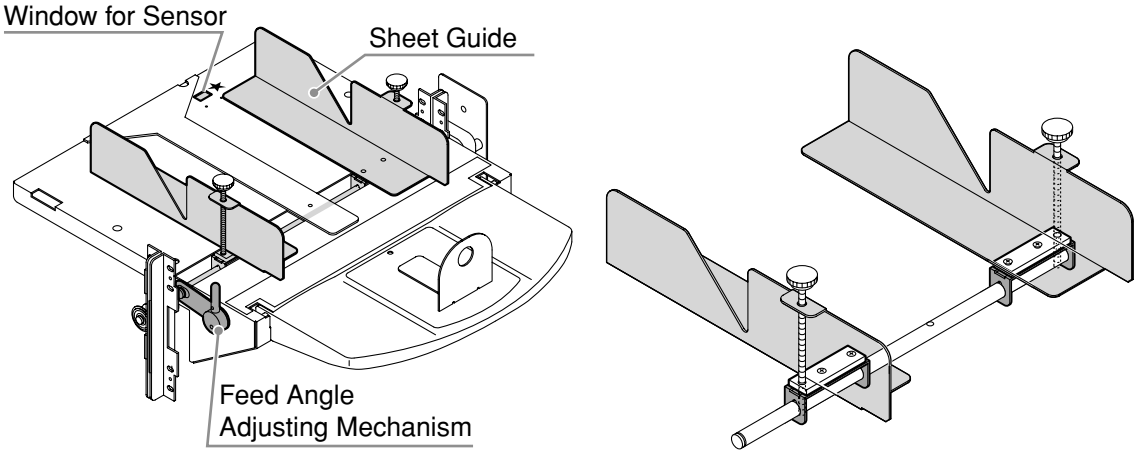
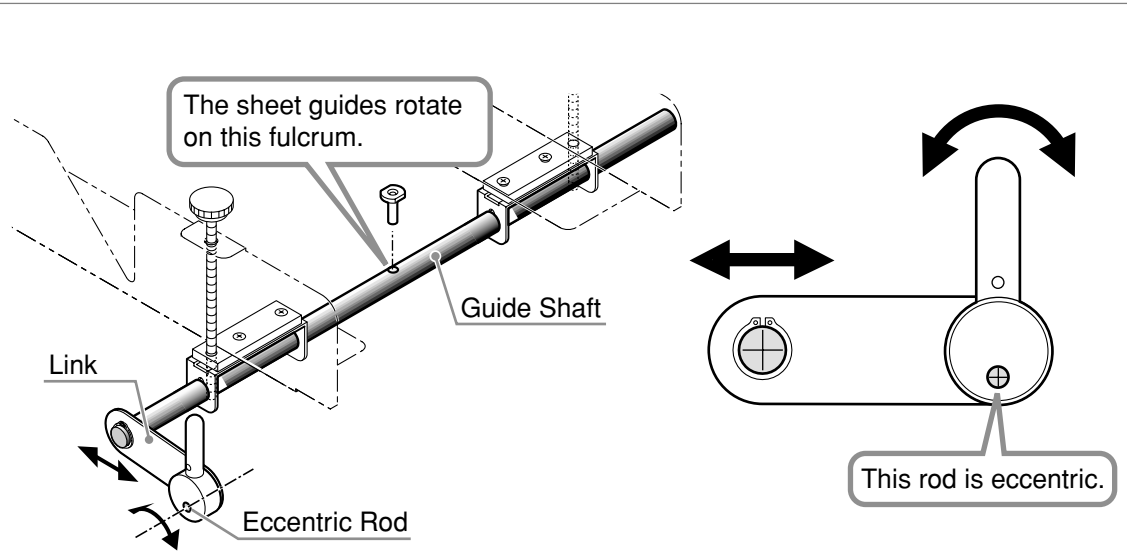
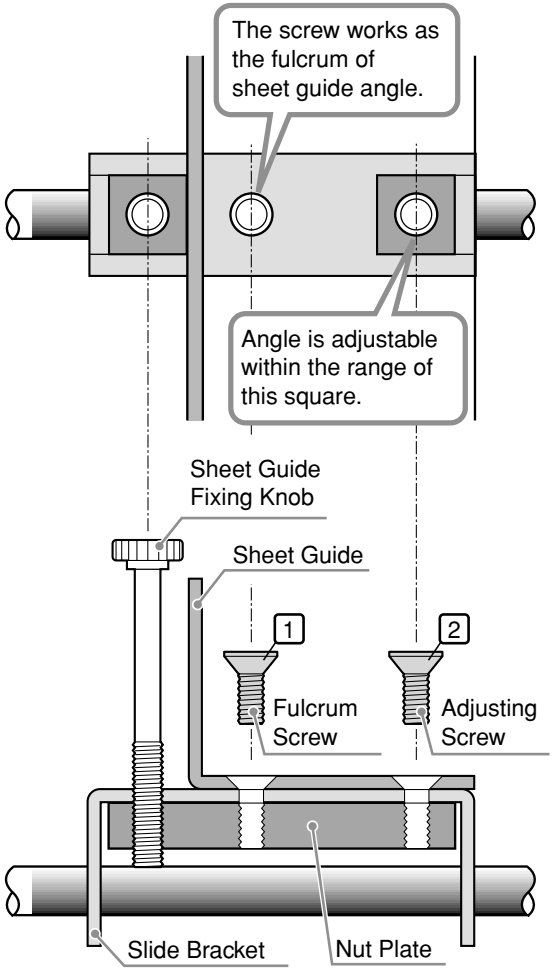
1. Mechanism

1-1 Feed Table Unit



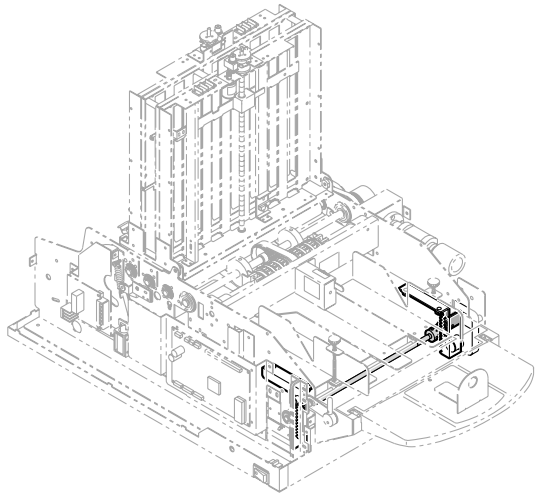


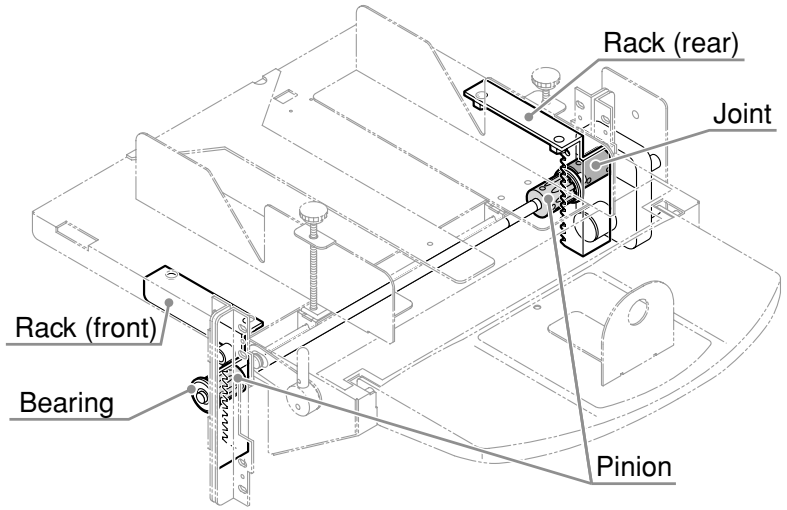
Feed Angle Adjusting Mechanism

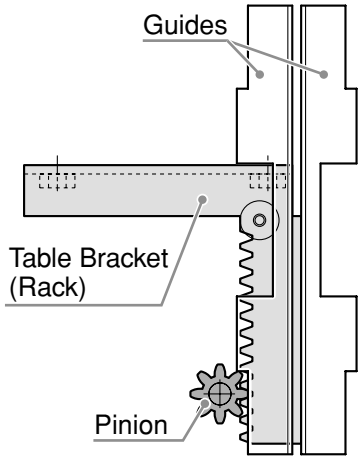


Sheet Guide Angle Adjusting Mechanism

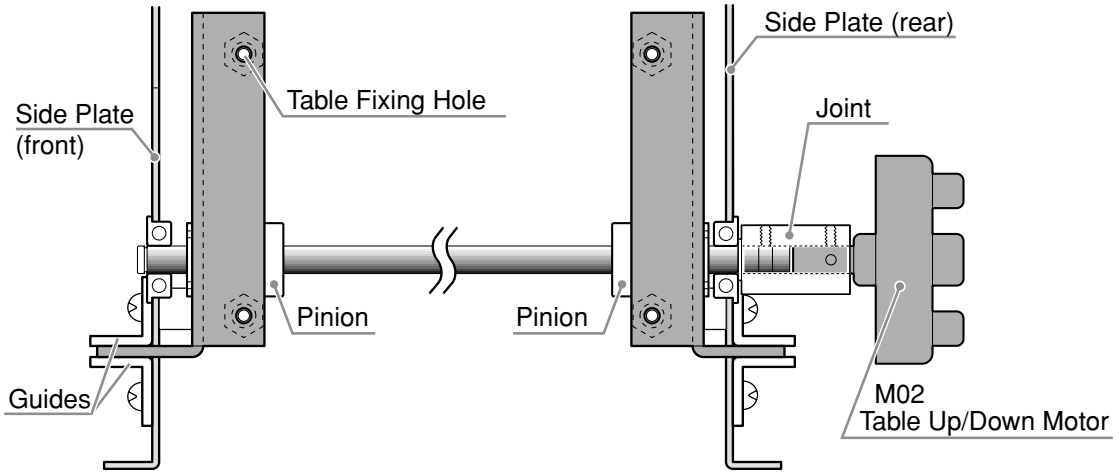
1-2 Table Up/Down Unit







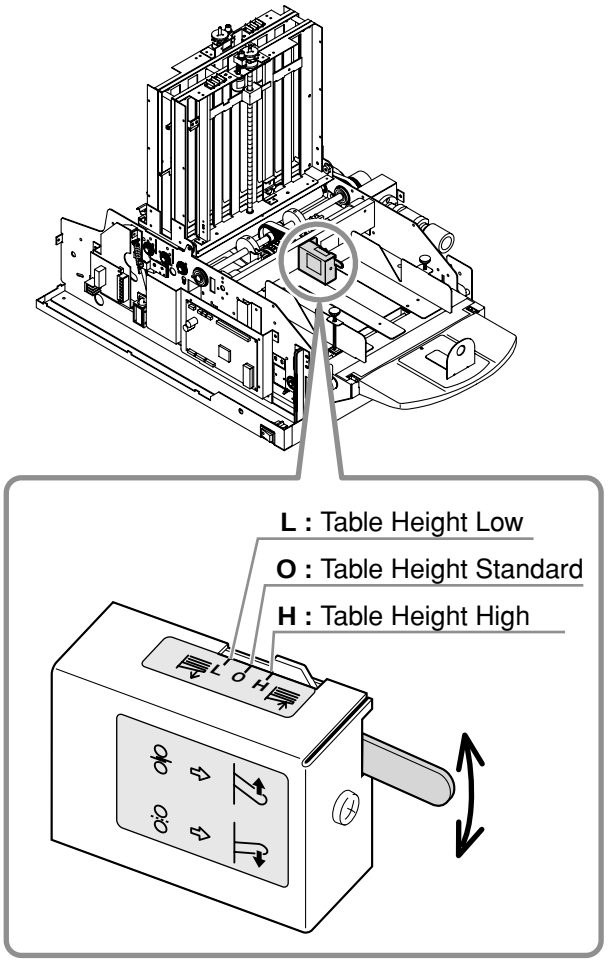
Side View

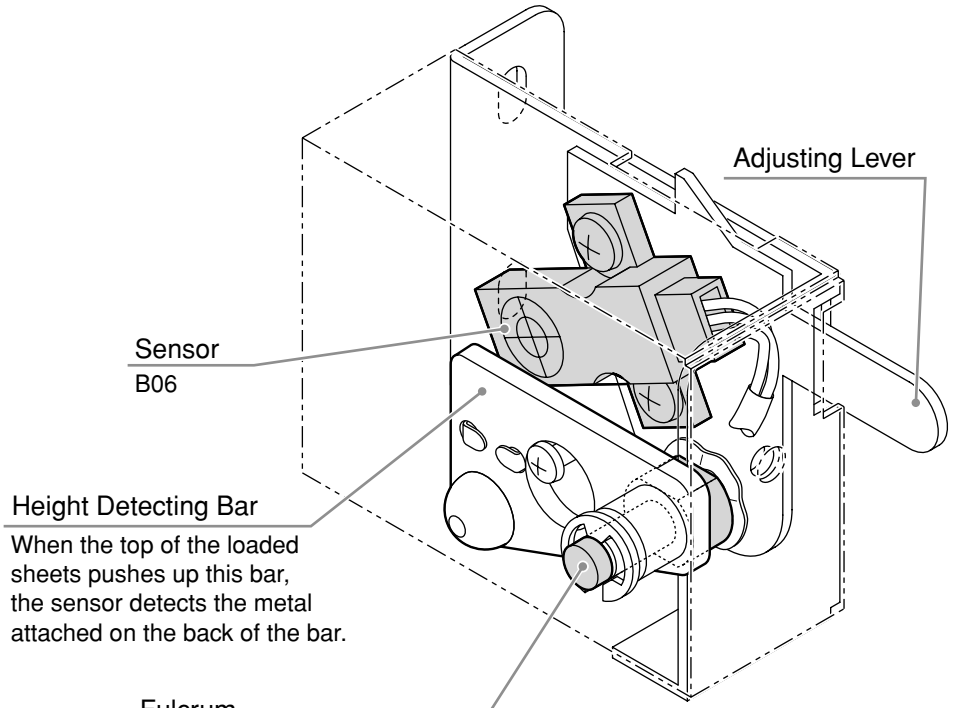


Top View

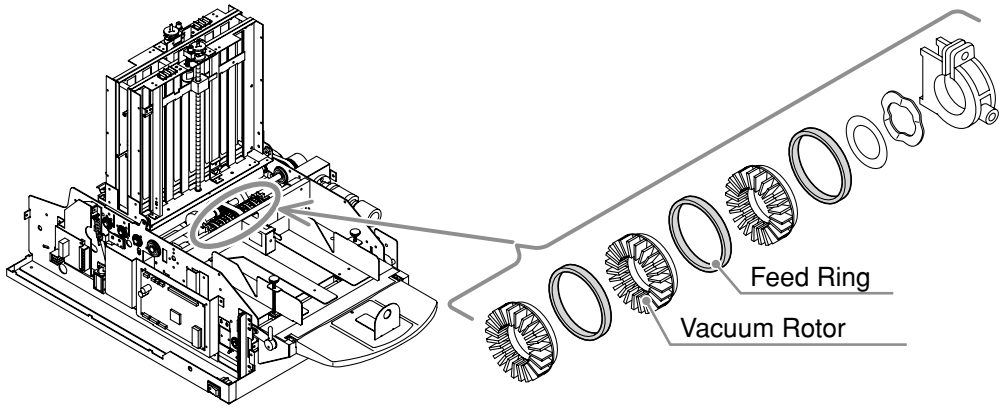
1-2: Table Up/Down Unit

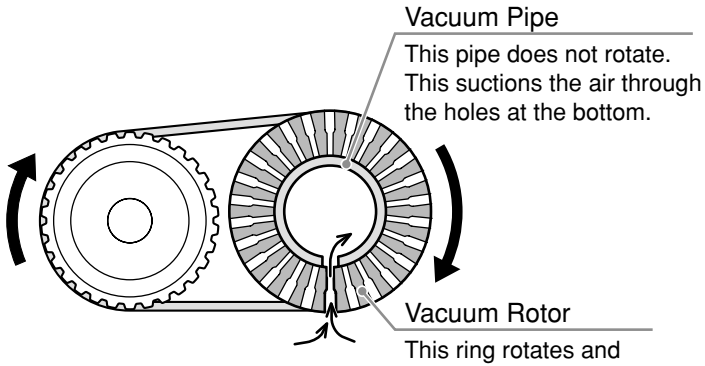
1-3 Table Height Detect Unit



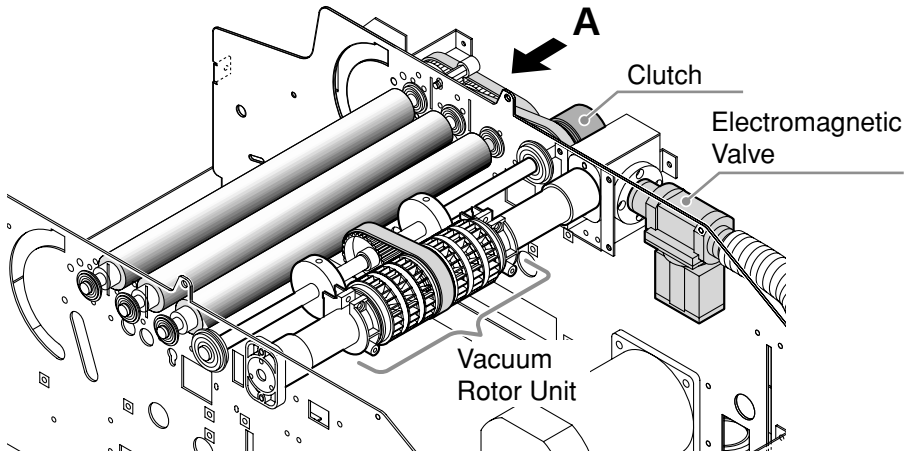

Adjusting Lever
Sensor
B06
Height Detecting Bar
When the top of the loaded sheets pushes up this bar, the sensor detects the metal attached on the back of the bar.
Fulcrum
Height Detecting Bar
Adjusting Lever
Fulcrum for both

1-4 Feed Rotor Unit

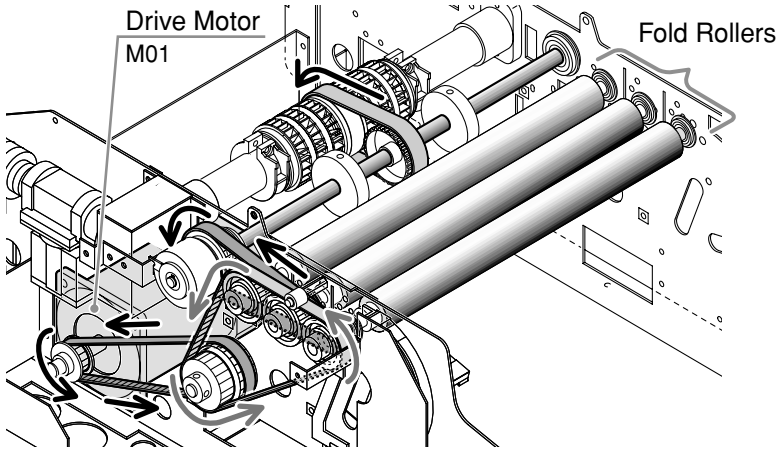




Vacuuming Mechanism

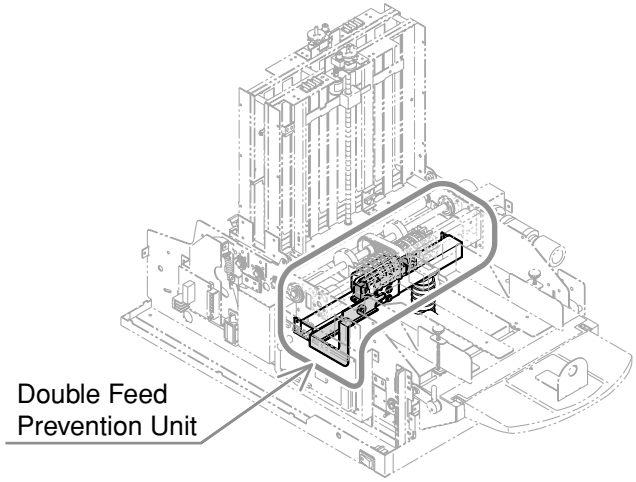


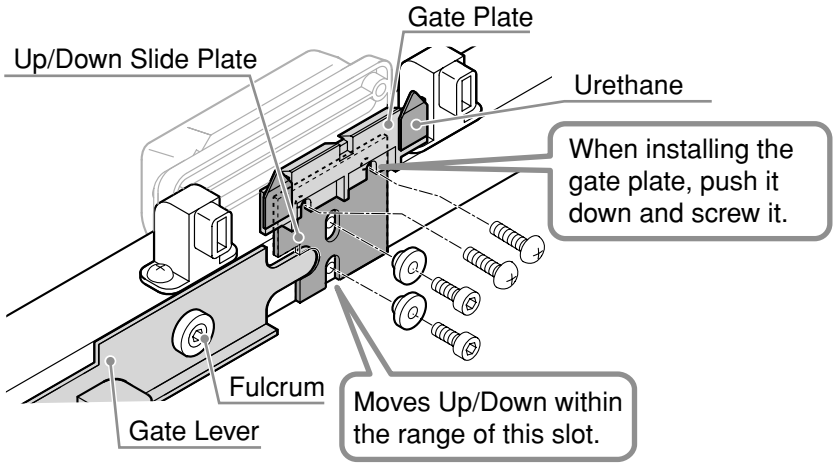
Vacuuming Mechanism

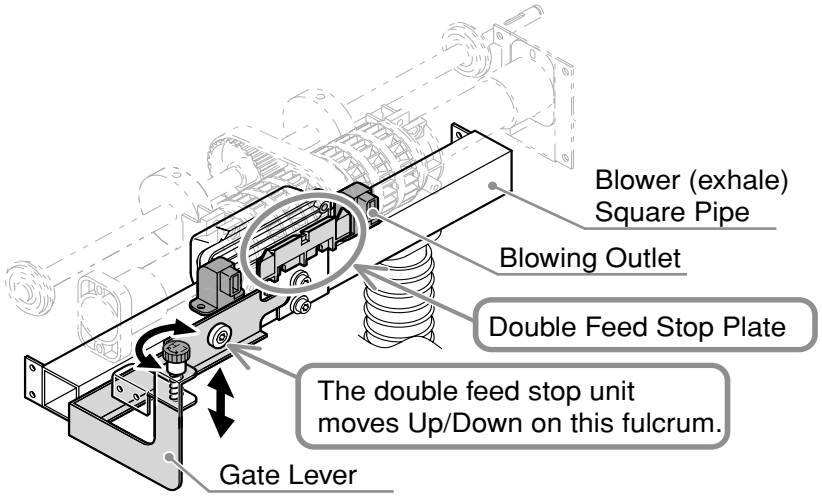


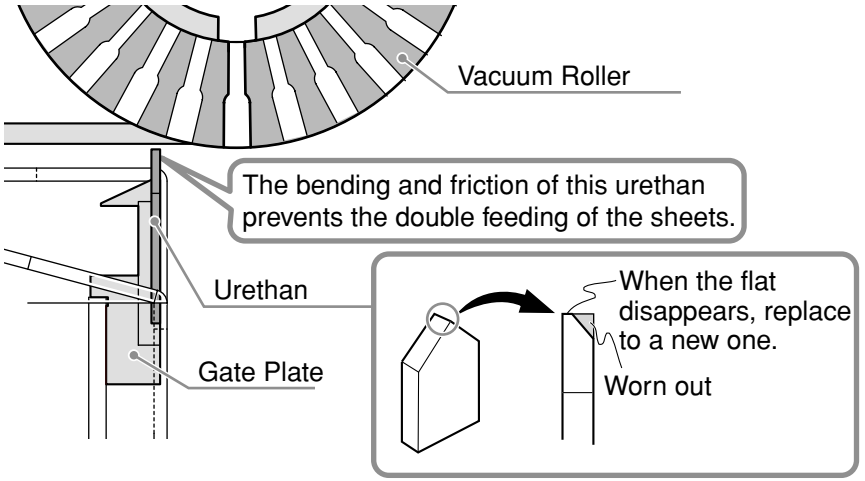
Driving Mechanism Viewing from A

1-5 Double Feed Stop Unit

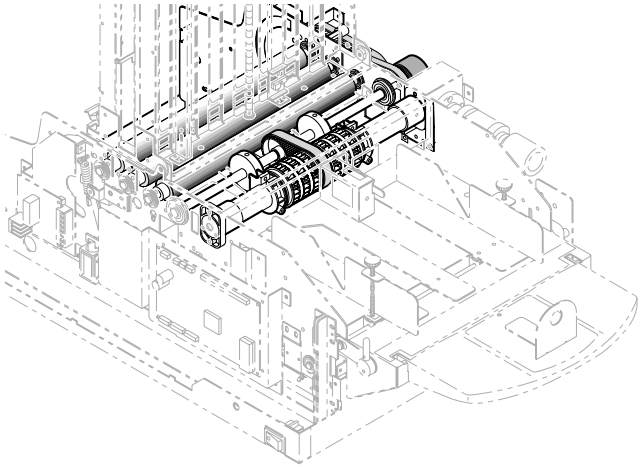


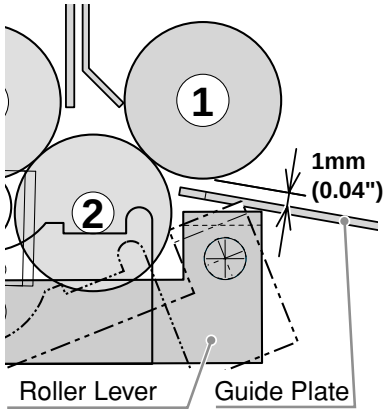

Gate Plate
Up/Down Slide Plate
Urethane
When installing the gate plate, push it down and screw it.
Fulcrum
Moves Up/Down within the range of this slot.
Gate Lever


Blower (exhale) Square Pipe
Blowing Outlet
Double Feed Stop Plate
The double feed stop unit moves Up/Down on this fulcrum.
Gate Lever


Vacuum Roller
The bending and friction of this urethan prevents the double feeding of the sheets.
Urethan
Gate Plate
When the flat disappears, replace to a new one.
Worn out

1-6 Fold Roller Unit





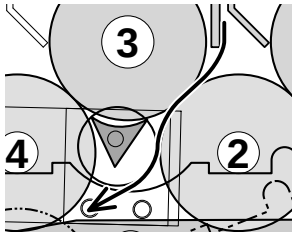
The gap between the first roller and guide plate = 1 mm (0.04")

[CHECK]

① Remove the second and fourth rollers.
② After removing the rollers, raise the buckle fixing lever and reset the roller lever level.
(If the buckle fixing lever is left lowered, the roller lever pushes the guide plate up.)
③ Insert an 1 mm (0.04") allen wrench from the infeed side, and check the gap.

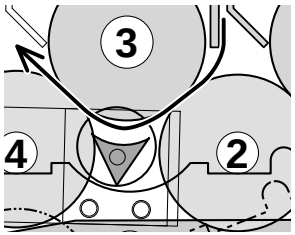
Solenoid ON = When the deflector is Up.

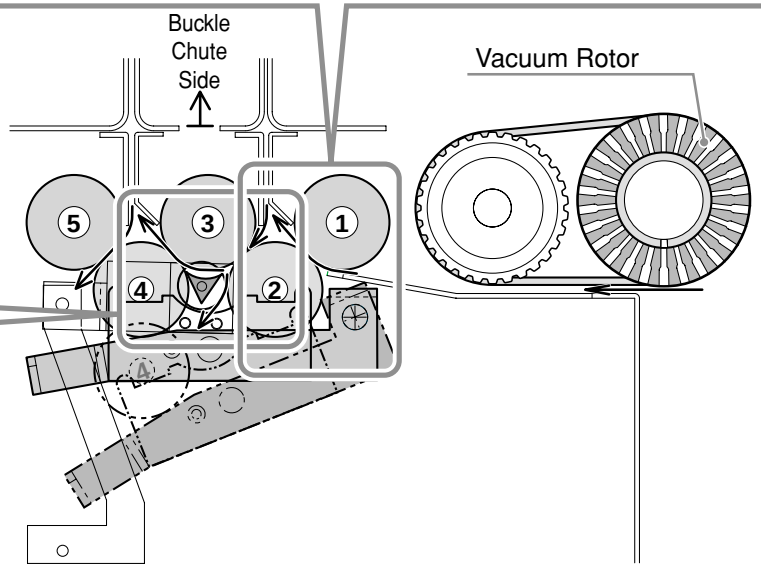
- When the solenoid turns ON, the deflector goes up and closer to the third roller.
- The sheet that comes through the second and third roller goes under the deflector and is delivered. (As shown with the arrow to the right.)



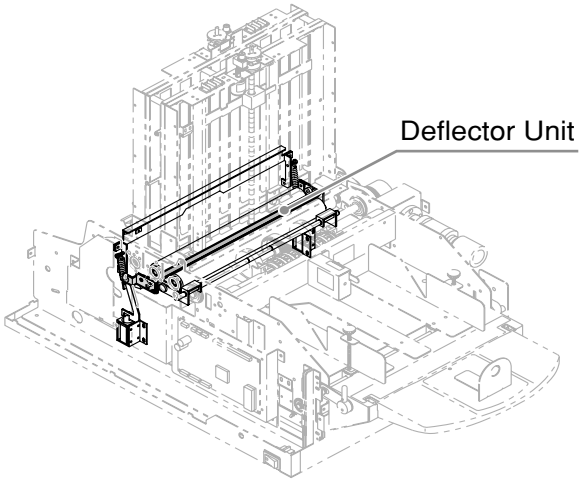
Solenoid OFF = When the deflector is Down.

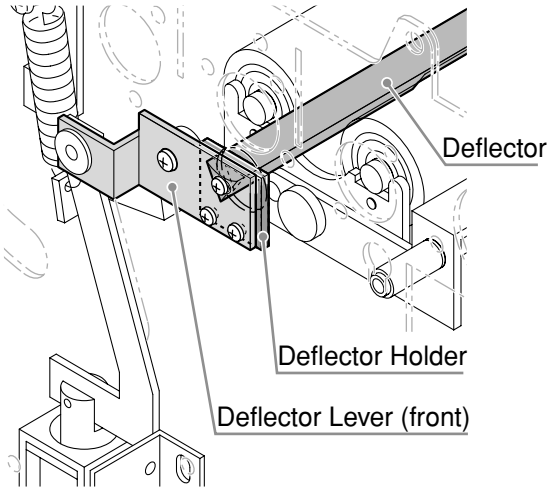
- When the solenoid turns OFF, the deflector lowers and makes a space between the deflector and the third roller.
- The sheet that comes through the second and third roller goes over the deflector, then goes to the second buckle chute through the third and fourth roller.

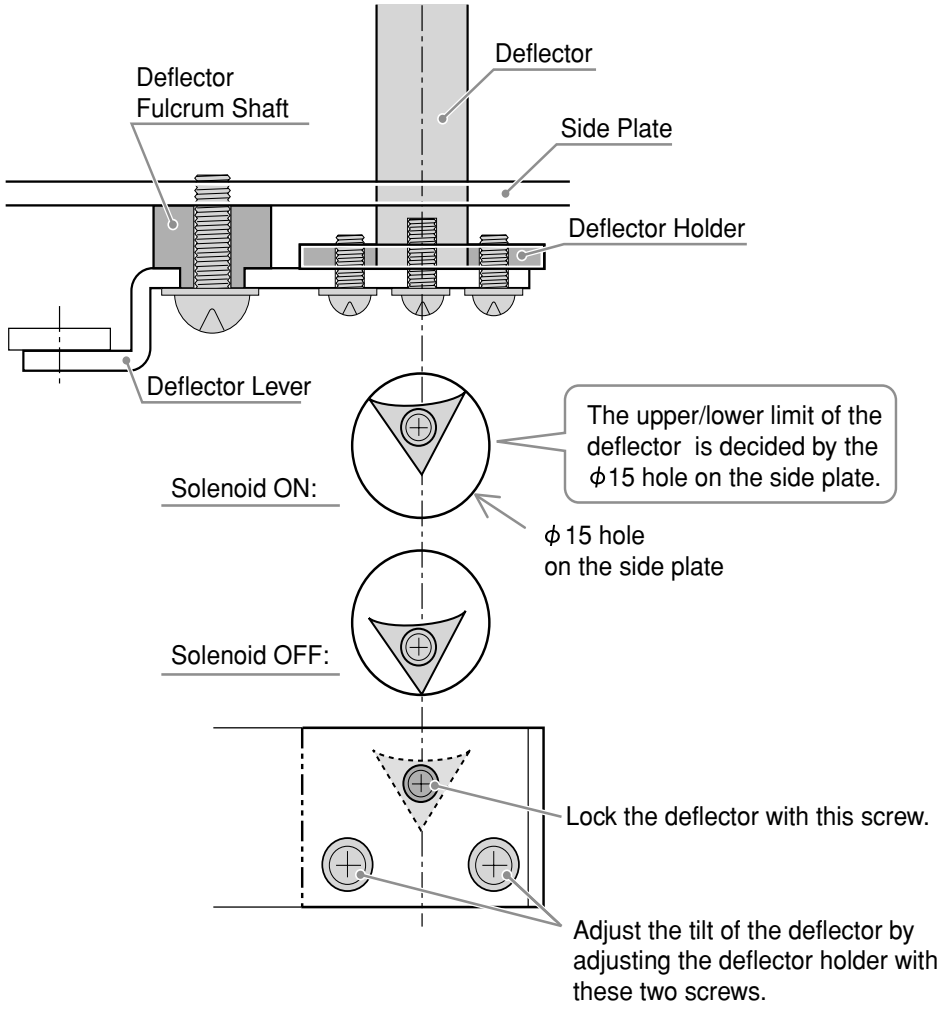




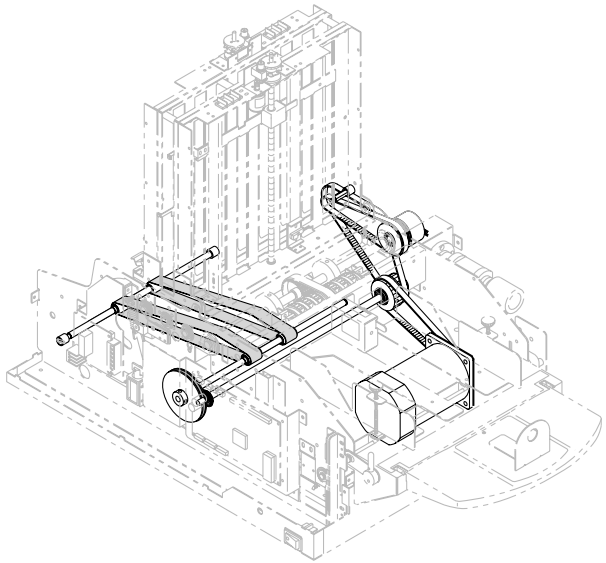
1-7 Deflector Unit

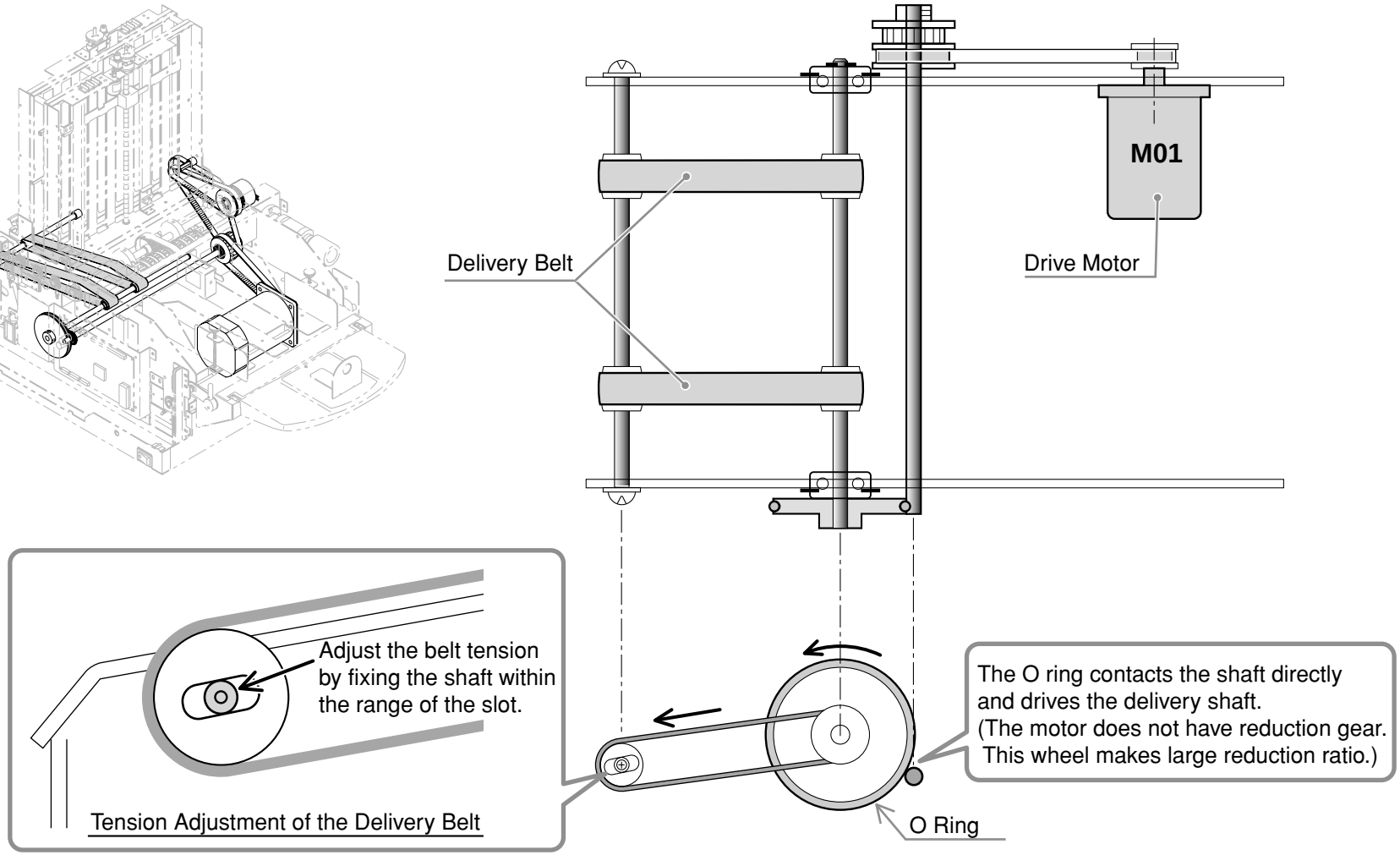




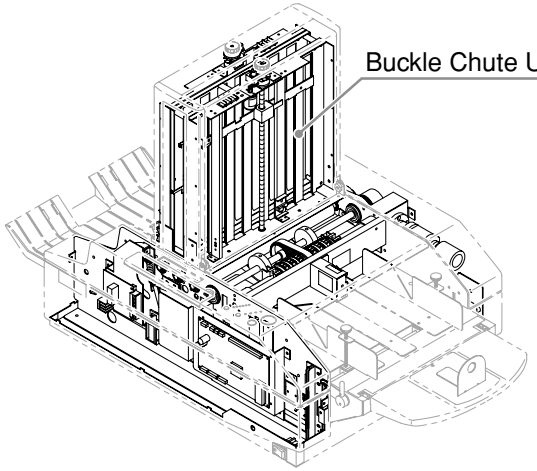

Deflector
Deflector
Fulcrum Shaft
Side Plate
Deflector Holder
Deflector Lever
The upper/lower limit of the deflector is decided by the ϕ15 hole on the side plate.
Solenoid ON:
ϕ15 hole
on the side plate
Solenoid OFF:
Lock the deflector with this screw.
Adjust the tilt of the deflector by adjusting the deflector holder with these two screws.

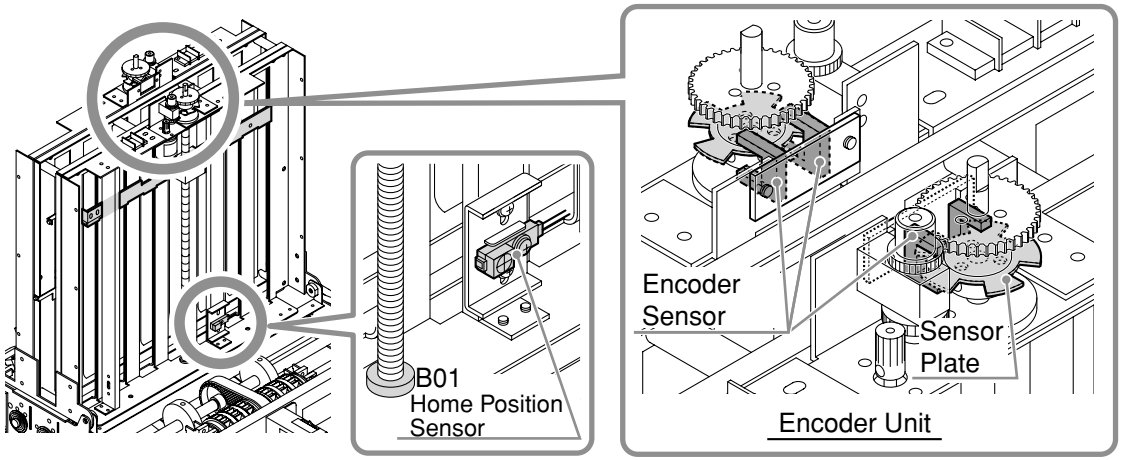
1-8 Delivery Unit

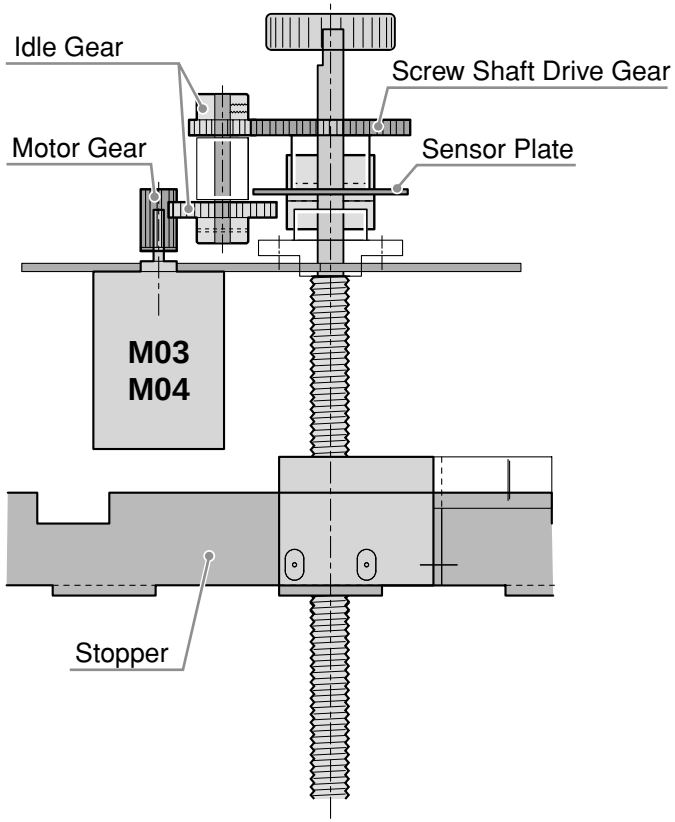



M01
Delivery Belt
Drive Motor
Adjust the belt tension
by fixing the shaft within
the range of the slot.
Tension Adjustment of the Delivery Belt
The O ring contacts the shaft directly
and drives the delivery shaft.
(The motor does not have reduction gear.
This wheel makes large reduction ratio.)
O Ring

1-9 Buckle Chute Unit

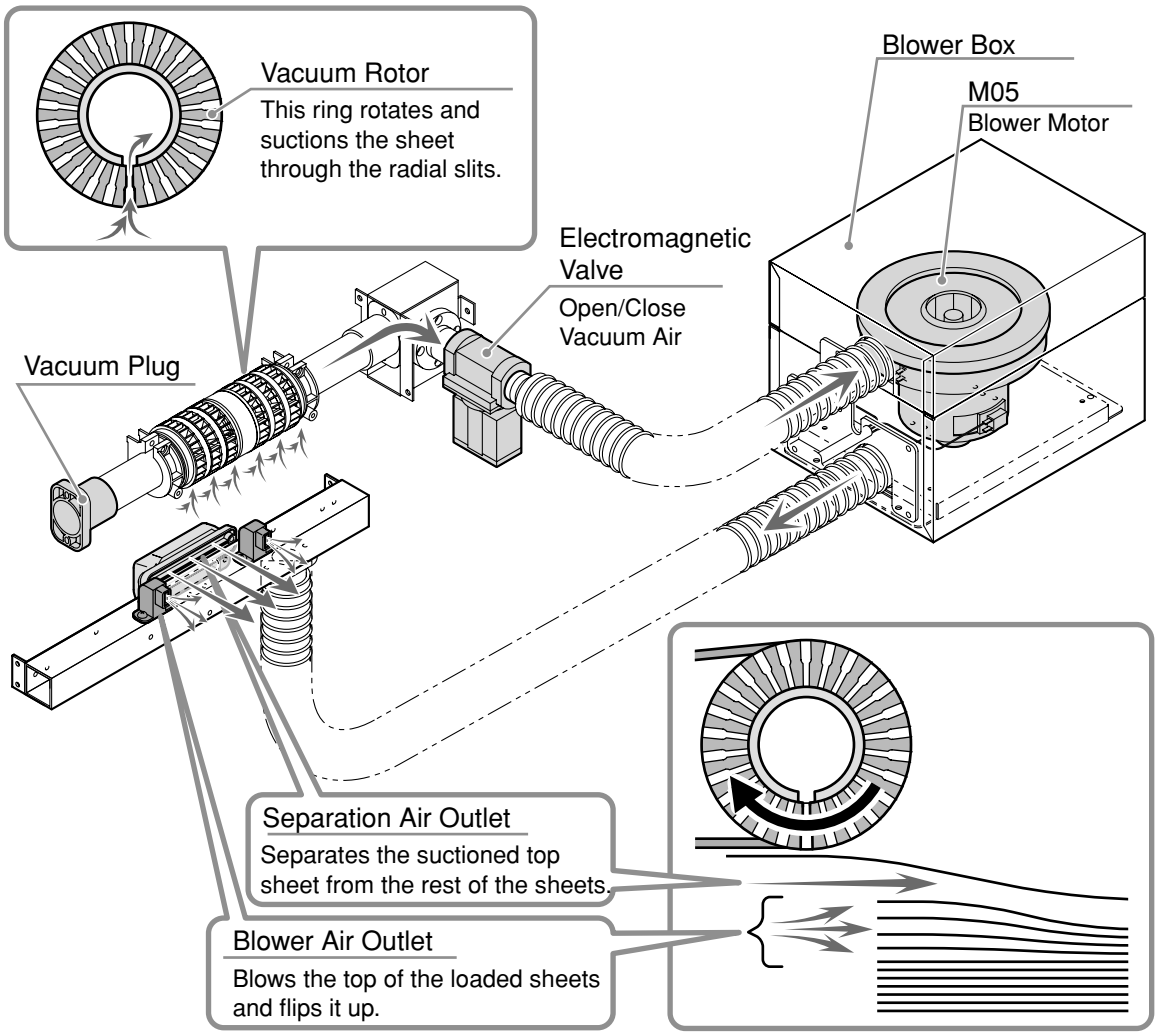




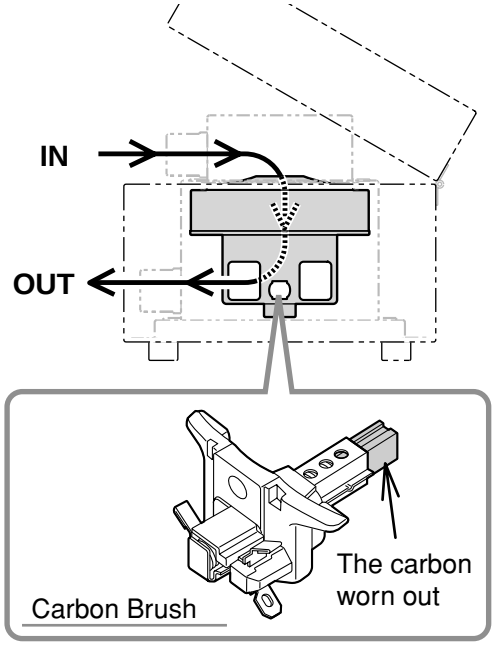


Stopper Drive Mechanism

1-10 Air Circuit Unit


Vacuum Rotor
This ring rotates and suctions the sheet through the radial slits.
Blower Box
M05
Blower Motor
Electromagnetic Valve
Open/Close Vacuum Air
Vacuum Plug
Separation Air Outlet
Separates the suctioned top sheet from the rest of the sheets.
Blower Air Outlet
Blows the top of the loaded sheets and flips it up.

- Inside the box, the motor M05 is installed.
- The air comes from top goes out through the coil of the motor. The coil is also cooled down by the air blow.



[CAUTION]
The carbon brush can not be replaced singly. Replace the whole blower box.

2. Service Mode

2-1 Operations of Service Mode

- **In the service mode, the operations listed on the chart to the right can be performed by pressing the power switch and the other switches together.**
- **To quit the service mode, turn OFF the power switch.**
- **While the PF-P330 is performing the service mode operations listed on the chart to the right, the sheet sensor B08 is deactivated. Therefore, the PF-P330 can run without sheets on the feed table.**

On the numeric key pad, press the [1] button and turn ON the power switch.	The first and second buckle chute stoppers move Up/Down at full stroke.	Buckle Chute Single Moving Mode
On the numeric key pad, press the [2] button and turn ON the power switch.	The total counter is indicated. (Total counter: The total number of the folding that is counted since the machine has been shipped. This is not cleared by pressing the [C] button.)	Total Counter Indication
On the numeric key pad, press the [3] button and turn ON the power switch.	① Buckle chute stopper Up/Down → ② Drive motor drives → ③ Feed table Up + Blower ON + Clutch ON + Valve ON → ④ Feed table Down + Blower OFF + Clutch OFF + Valve OFF → Repeat ③ → ④ → ①	Non-Production Run Mode
On the numeric key pad, press the [4] button and turn ON the power switch.	① Drive motor drives + Feed table Up and stops → ② Clutch repeats ON/OFF	Clutch Unit Single Operation Mode
On the numeric key pad, press the [5] button and turn ON the power switch.	① Drive motor drives → ② Feed table Up + Blower ON + Clutch ON + Valve ON → ③ Feed table Down + Blower OFF + Clutch OFF + Valve OFF → Repeat ② → ③	Non-Production Run Mode Except Buckle Chute Unit
On the numeric key pad, press the [C] button and turn ON the power switch.	All stored memories are cleared.	Memory All Clear
On the numeric key pad, press the [O] & [C] and turn ON the power switch.	Total counter is reset to “0”	Total Counter Clear
When the folding pattern is NOT the Single Fold, press the [0] button and [Feed Gap] button.	Solenoid Y02 and Y03 turn ON and the deflector closes.	Deflector Close

2-2 Calibrating the Home Position (Buckle Chute Stopper)

■ **On the PF-P330, the home position of the buckle chute stopper only should be calibrated manually.**

Fold one sheet and adjust the home position depending on the shift of the folded sheet.

1. Perform the single folding.
2. Measure the shift of the fold position. (Fig.1)
3. Adjust the first buckle chute home position sensor B01 by the half of the folding shift. (Fig.2)
4. Perform the parallel folding.
5. Measure the shift of the fold position. (Fig.1)
6. Adjust the second buckle chute home position sensor B02 by the half of the folding shift.

[Additional Information]

After the fold pattern and sheet size are selected, the stopper lowers. When the home position sensor detects the stopper, the motor reverses and the stopper lifts.
The stopper moving amount is calculated from the fold pattern and the sheet size. Therefore, if the sensor position is shifted upward, the stopper position is also shifted upward by the same amount.

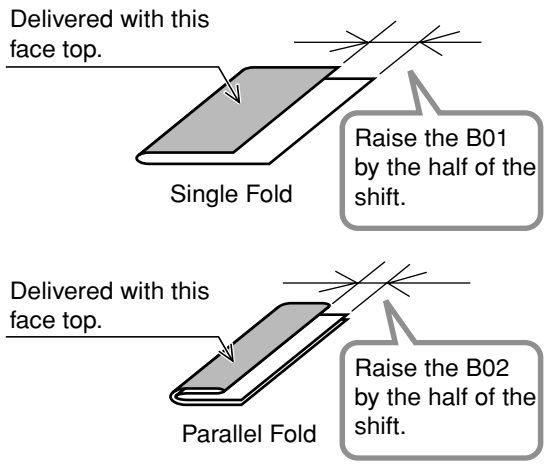

Delivered with this face top.
Raise the B01 by the half of the shift.
Single Fold
Delivered with this face top.
Raise the B02 by the half of the shift.
Parallel Fold

Fig.1 Adjusting Amount

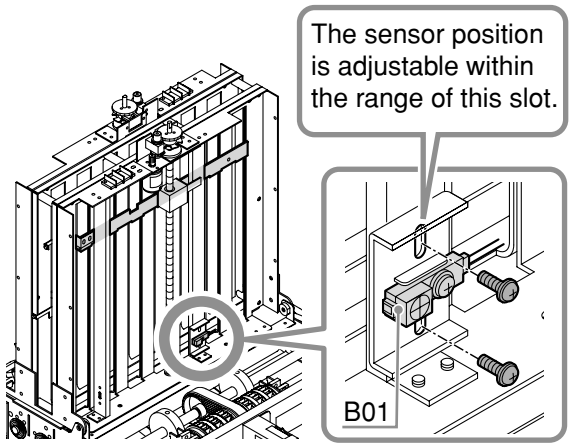


Fig.2 The First Buckle Chute Home Position Sensor B01

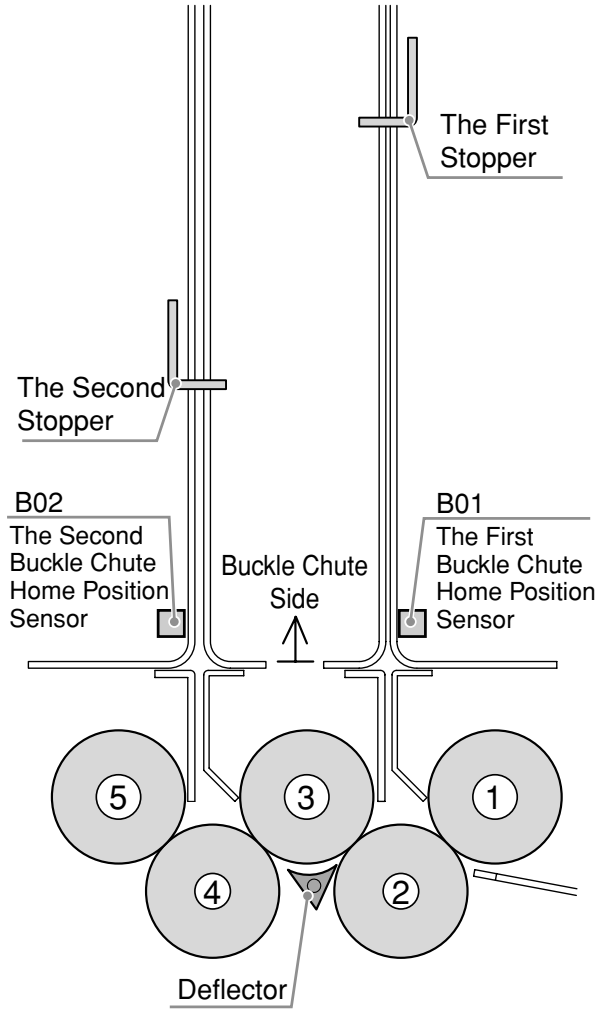


Fig.3 Folding Unit

3. Adjusting and Checking Procedures

3-1 Sheet Guides Right Angle and Parallel Adjustment

■ **PF-P330 has the mechanism that the sheet guides F and R turn together to feed sheets to the feed rotor at right angle. (Fig.1)**

This section describes instructions to correct the angle of the sheet guides F and R in case their angle differs each other (Fig.2)

1 Loosen the fulcrum screw on the sheet guide. (Fig.2)
- Do not remove the screw completely, just loosen it by the half of a rotation.

2 Loosen the adjusting screw.
- Do not remove the screw completely, just loosen it by one rotation.

3 Adjust the sheet guide angle at right angle and parallel. (Fig.3)
- Load a square sheet on the feed table.
- Place the sheet so that sheet edge touches the front stop.
- Align the sheet guide F and R with the sheet and tighten the screws described in step 1 and 2.

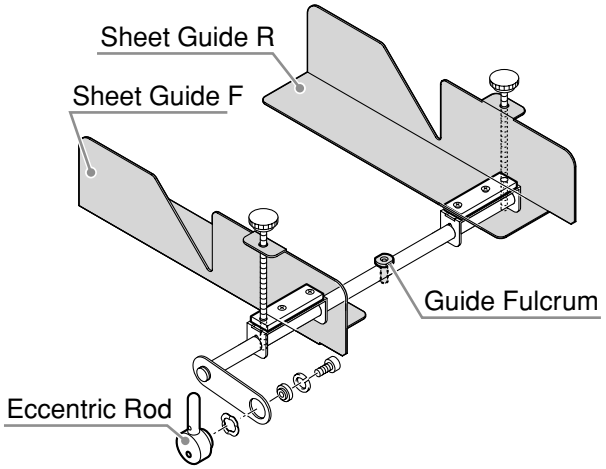


Fig. 1 Feed Angle Adjusting Mechanism

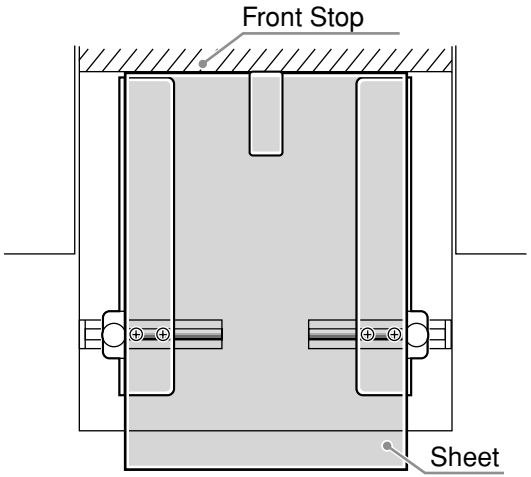


Fig. 3 Right Angle and Parallel Adjustment

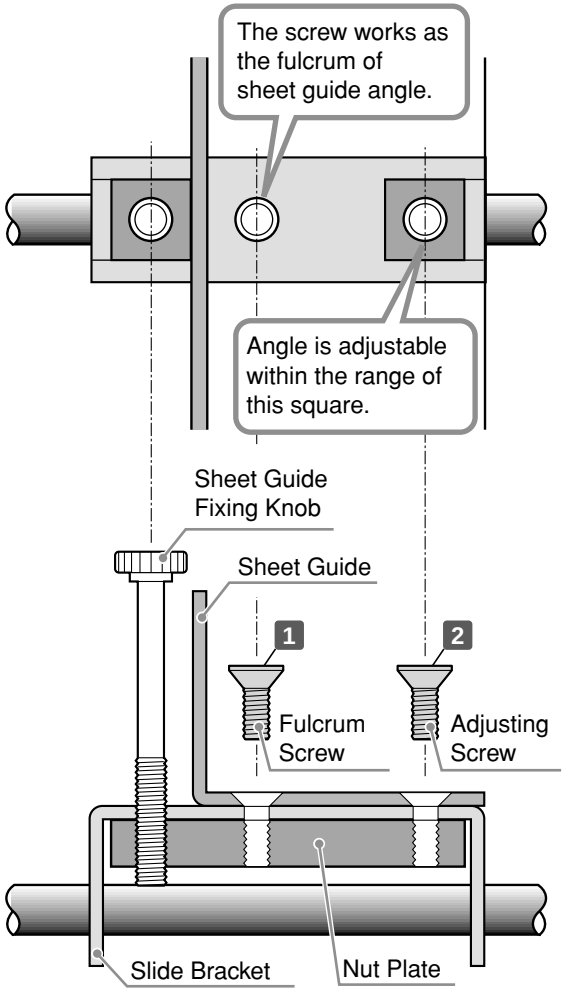


Fig. 2 Sheet Guide Mechanism

3-2 Rack and Pinion Position Adjustment

■ **The feed table moves Up/Down by the rack F/R and the pinions. If the position of the rack and pinion differs at the front and rear, the feed table can not move smoothly.**

1 Remove the feed table.

2 Loosen the fixing screws on pinion.
- Release the pinion so that it can turns freely.

3 Insert the rack into the slot on the side plate.

4 Set the rack. (Fig.2)
- Place two slide guides on both side of the rack and fix the rack on the infeed side.

① The slot on the side plate is wider than the plate thickness of the rack. Put the rack on the infeed (entrance) side of the slot.

② Fix the slide guide at the inner (exit) side of the machine.

③ Fix the other slide guide at the infeed (entrance) side.

5 Raise the rack to the upper limit. (Fig.3)
- Keep the rack at the upper limit during performing the next step 6. Hold the rack using a rope or magnet.

6 Lock the pinion. (Fig.3)

7 Set the rack at front side as well.

8 Check the items listed in Fig.4.

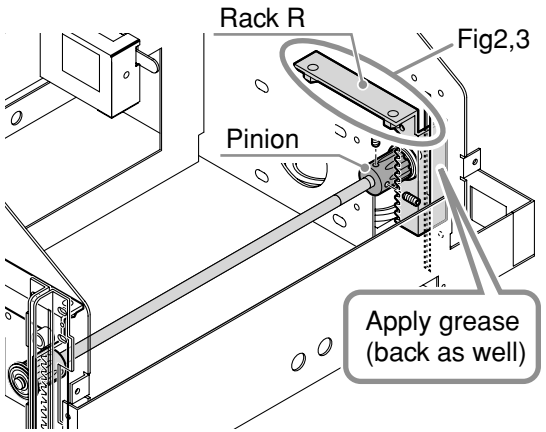


Fig. 1 Rack and Pinion

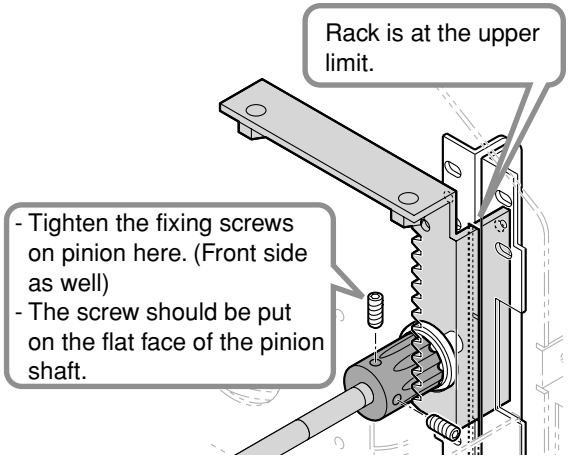

Rack is at the upper limit.
- Tighten the fixing screws on pinion here. (Front side as well)
- The screw should be put on the flat face of the pinion shaft.

Fig. 3 Lock the Pinion

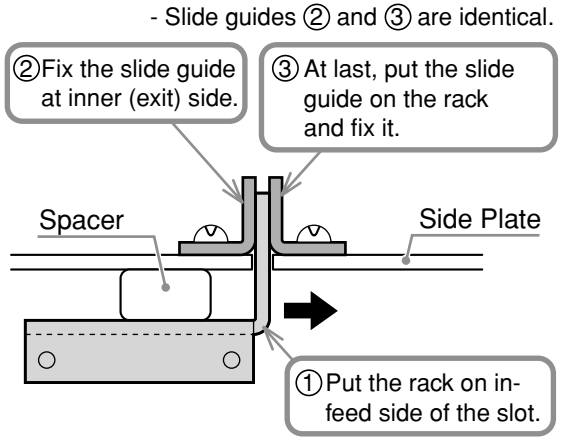

- Slide guides ② and ③ are identical.
②Fix the slide guide at inner (exit) side.
③ At last, put the slide guide on the rack and fix it.
Spacer
Side Plate
①Put the rack on in-feed side of the slot.

Fig. 2 Rack and Slide Guide

☐ Enough grease is applied on the rack that is installed between the slide guides.

☐ The rack that is installed between the slide guides moves Up/Down smoothly.

☐ The tops of rack F and rack R are at the same height.

☐ Grease is applied on the mesh of rack and pinion.

Fig. 4 Check List

3-3 Lower Guide and Fold Roller Gap Adjustment

- **The shape of the lower guide is easy to be deformed as shown in Fig.1.**
- **Sheet goes to the fold roller after passing through between the upper guide and lower guide as shown in Fig.3.**
- **The gap between the lower guide and the first fold roller should be 1 mm (0.04”.)**

1 Check the gap.

- Looking from the infeed entrance, use a small light and check if the three gaps between the lower guide and fold roller are 1 mm (0.04” .) (Fig.2)

[Note]
Use a 1 mm-thick strip of sheet to check the gap accurately.

- If the gap is not correct, go to the next step **2** .

2 Open the feed section cover. (Fig.4)

3 Remove the feed roller cover. (Fig.4)

- The lower guide positions under the upper guide. Adjust the front edge of the lower guide to adjust the gap.

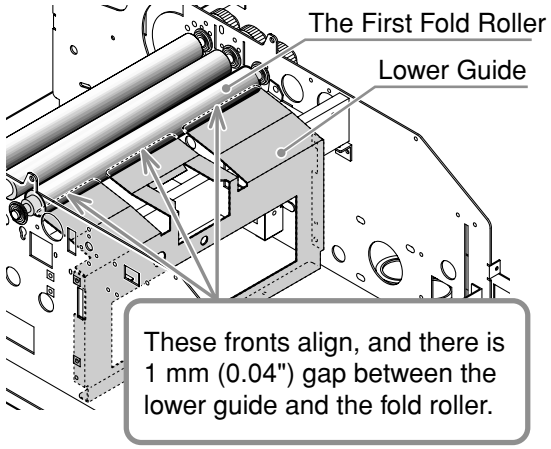


Fig. 1 Lower Guide and First Fold Roller

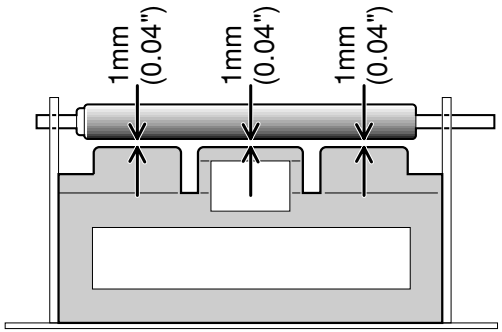


Fig. 2 Amount of the Gap

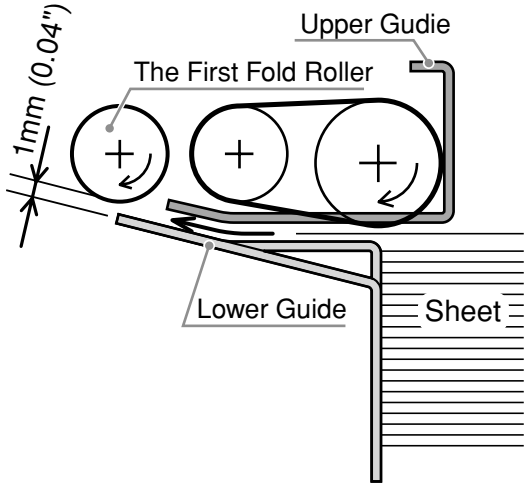


Fig. 3 Upper and Lower Guides

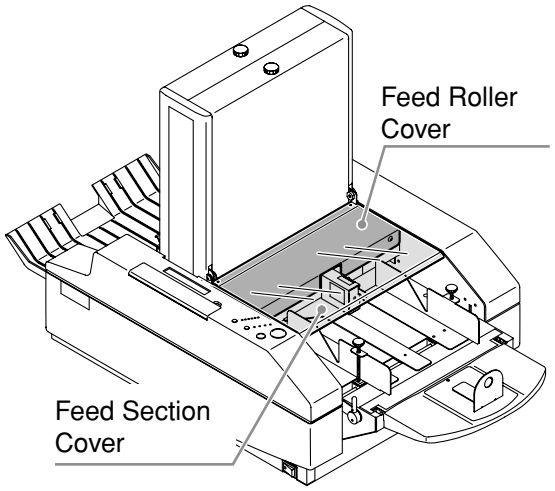


Fig. 4 Feed Section Covers

3-4 Deflector Position Adjustment

- **The deflector decides if the sheet is delivered or folded again.**
- **The upper or lower limit of the deflector is defined by the Φ 15 hole on the side plate. (Fig.2)**

1. Remove the second and fourth rollers.
2. Loosen the fixing screws on the deflector holder. (Fig.3)
3. Insert a 0.5 mm (0.02”) thickness of the sheet between the third roller and the deflector. (Fig.3)
4. Lock the deflector holder.
   - Hold up the deflector holder and tighten the fixing screws.
   - Remove the inserted sheet.
5. Adjust the solenoid position. (Fig.4)
   - Position the solenoid so that when the plunger is pushed in, the deflector touches the Φ 15 side plate hole. Tighten the fixing screws in that position.
6. Check
   - Remove the fold roller drive belt. Keep pressing plunger on the solenoid and turn the third roller manually. Check that the roller turns silently (the deflector does not touch the roller.)

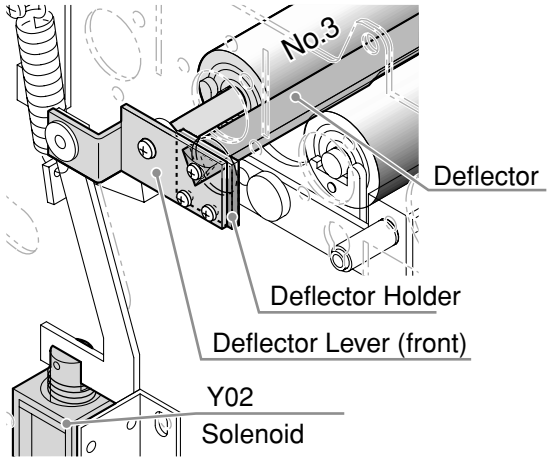


Fig. 1 Deflector Drive Mechanism

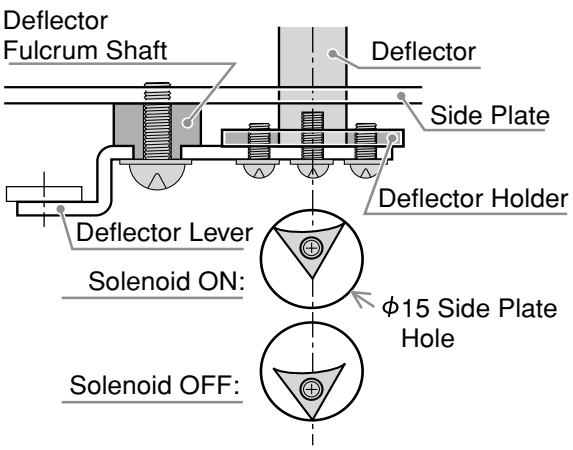


Fig. 2 Solenoid ON/OFF and Deflector Position

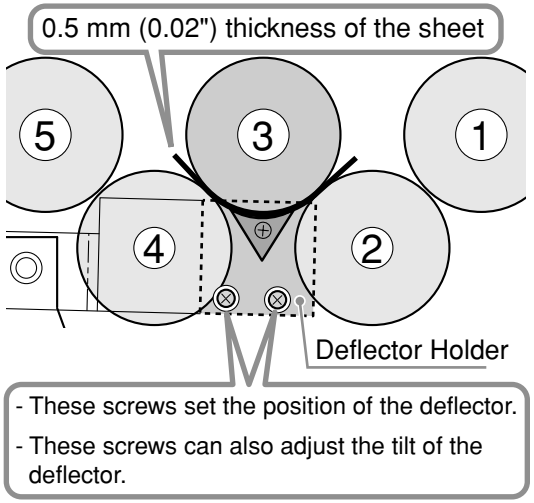


Fig. 3 Deflector Holder

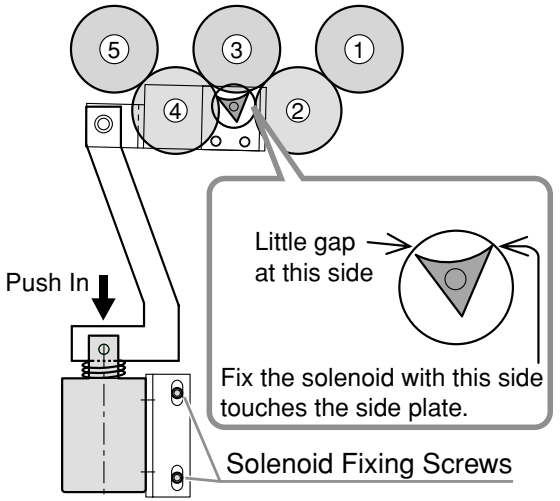


Fig. 4 Solenoid Position Adjustment

3-5 Buckle Chute Stopper Level Adjustment

1 Check the sheet guides.
- Place a sheet so that the sheet edge touches the front stop and check that the sheet guides are parallel to the sheet. (Fig.1)
  If the sheet guides are askew, see Section 3-1: Sheet Guides Right Angle and Parallel Adjustment and correct the sheet guides angle.

2 Remove the cover on buckle chute section.
- Lay down the buckle chute section and loosen the fixing screws at the bottom of the buckle chute. (Fig.2)

3 Remove the rear cover.
- In later procedure, the motor belt will be driven manually to feed a sheet.

4 Load a sheet on the feed table.
- Load a square sheet and place the sheet guides on both side.

5 Feed a sheet.
- Drive the motor belt manually and feed a sheet.
- Stop the belt at position where the sheet front edge touches the stopper.

6 Adjust the stopper angle.
- Adjust the stopper angle within the play made by the two fixing screws so that the stopper is parallel to the sheet. (Fig.3)

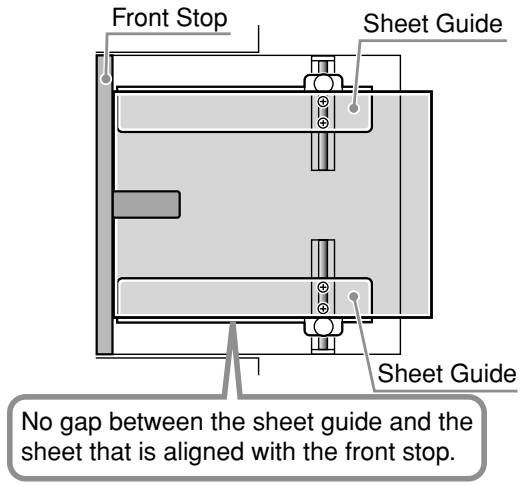


Fig. 1 Sheet Guide

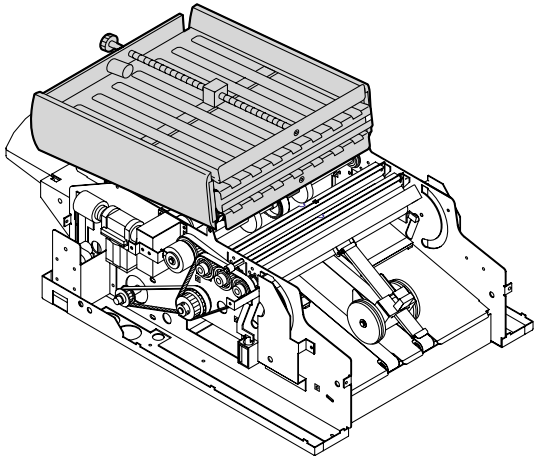


Fig. 2 Remove the Covers

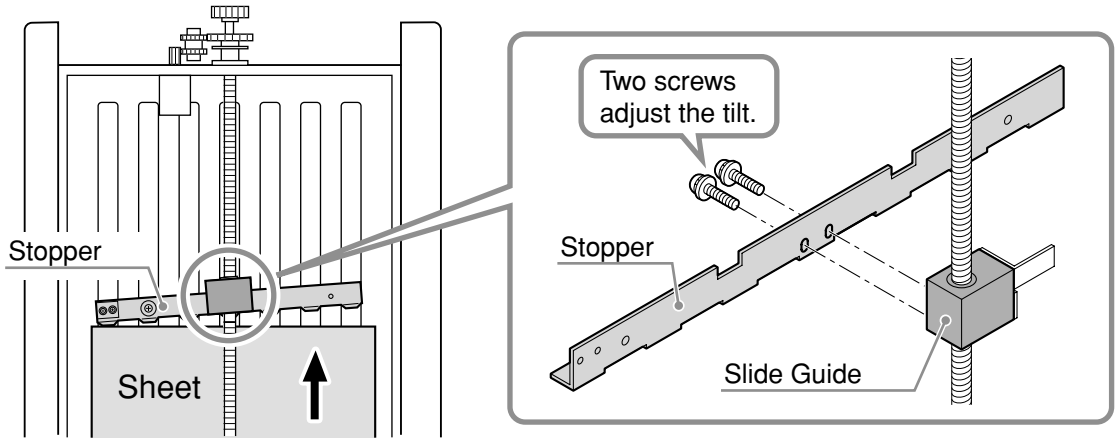


Fig. 3 Stopper Fixing Section

3-6 Belt Tension Adjustment

Drive Timing Belt Tension

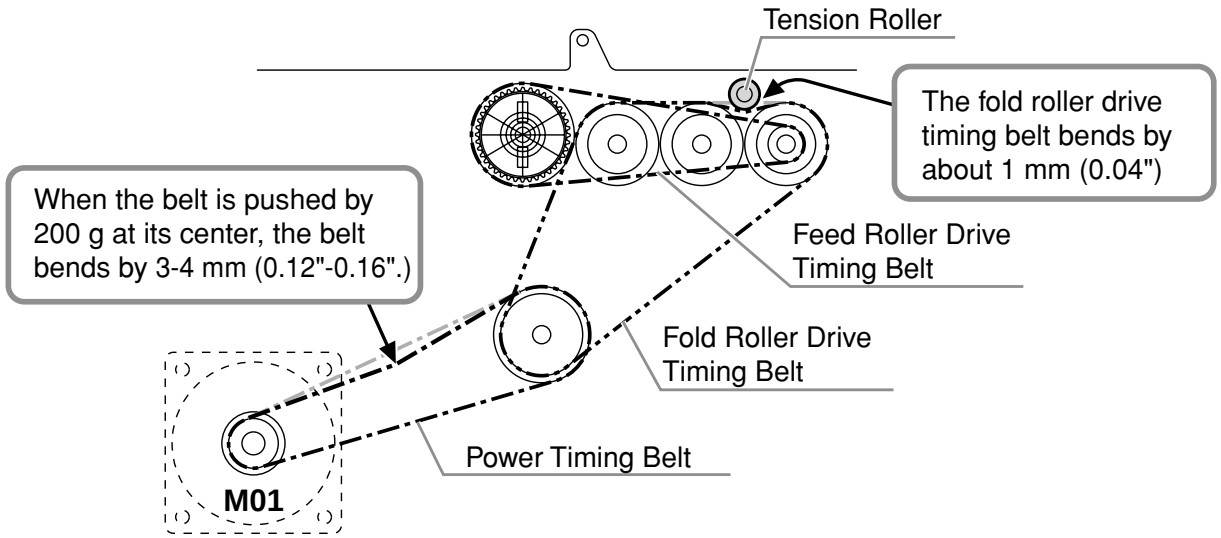
- The tension of the drive timing belt is adjusted by the fixing position of the drive motor (M01.)
- Too much belt tension may result in that the timing belt vibrated by the motion of the machine. Do not tense the belt too much.

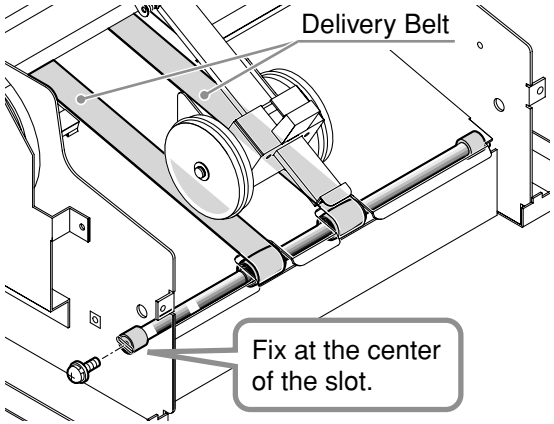
Fold Roller Drive Timing Belt Tension

- The tension of the fold roller drive timing belt is adjusted by the fixing position of the tension roller. The hole on the side plate to fix the tension roller is slot.

Delivery Belt Tension

- The delivery belts are flexible, therefore, the belt tension is not adjustable. Fix the delivery roller shaft at the center of the slot on the side plate.
- If the delivery belt slips, set the delivery roller shaft at exit side of the slot.


Tension Roller
The fold roller drive timing belt bends by about 1 mm (0.04")
When the belt is pushed by 200 g at its center, the belt bends by 3-4 mm (0.12"-0.16".)
Feed Roller Drive Timing Belt
Fold Roller Drive Timing Belt
Power Timing Belt
M01



3-7 Stopper (Roller Lever) Position Adjustment

- **The stopper of the roller lever prevents the removable rollers (the second and fourth rollers) from compressing the other rollers (the first, third and fifth rollers) too much. (Fig.1)**
- **If the rollers are compressed each other for a long time, the roller lever is raised gradually. To avoid that, limit the pressure of compressing the rollers by the stopper position.**
- **When the stopper positions as shown in the Fig.2-A, the second and fourth rollers can not touch the first, third and fifth rollers and can not fold a sheet.**

  When the stopper positions as shown in the Fig.2-B, the second and fourth rollers compress the first, third and fifth rollers too much. If the rollers are left as such for a long period, they may be deformed.

1. Install the second and fourth rollers.
2. Adjust the eccentric stopper angle.
   - Set the stopper so that the hole for Allen wrench positions at the delivery (exit) side.
3. Set the gap between the stopper and the roller lever.
   - Fix the stopper so that the gap is 0.05 -0.15 mm (0.002” -0.005”.)
   - In case of 64 gsm sheet, insert one or two sheets in between and fix the eccentric stopper.

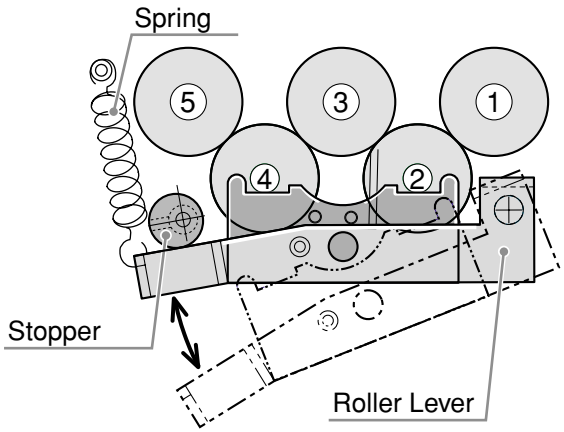


Fig.1 Roller Unit

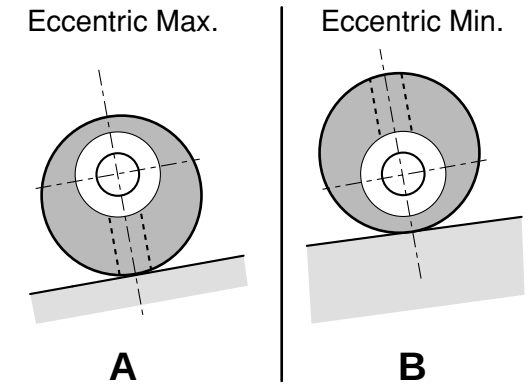
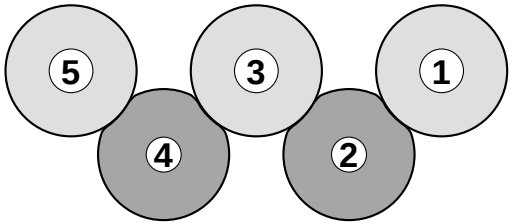


Fig.2 Eccentric Stopper Position



(When the eccentric stopper positions as Fig.2 -B, the rollers compress too much and are deformed.)

Fig.3 Roller Compressing

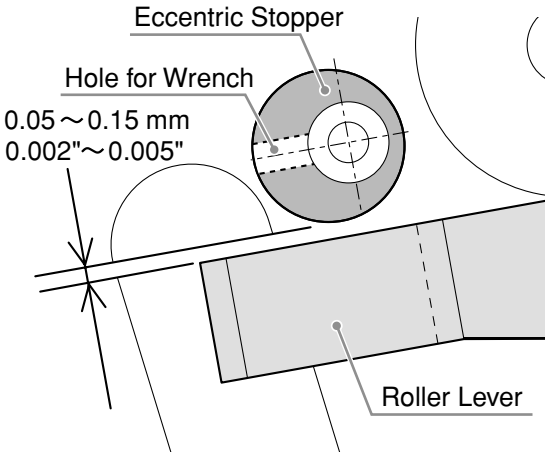


Fig.4 Correct Gap

3-8 Table Upper Limit Switch S01 Position Adjustment

- **The table upper limit switch S01 (Fig.1) detects the upper limit of the feed table.**
- **When the feed table is Up, the sheet loaded on the feed table is detected by the sheet upper limit sensor B06 (Fig.2) and the feed table stops there.**

  If the sensor B06 malfunctions or the feed table lifts with an object on it, the upper guide is raised and the S01 activates to stop the feed table.

1. Loosen the fixing screws on table upper limit switch S01.
2. Lock the S01 in position that its actuator positions as shown in Fig.3.
3. Check the followings.
   ① Load a couple of sheets on the feed table.
   ② Turn ON the power switch.
   ③ Press the test feed button.
   The feed table moves Up.
   ④ Raise the upper guide manually.
   If the table stops and starts lowering, the S01 is installed correctly.

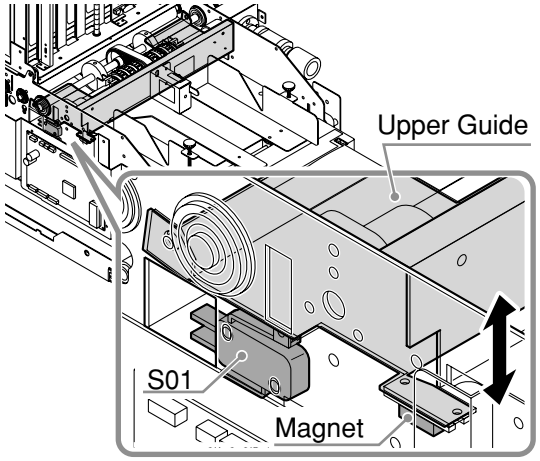


Fig.1 Table Upper Limit Switch S01

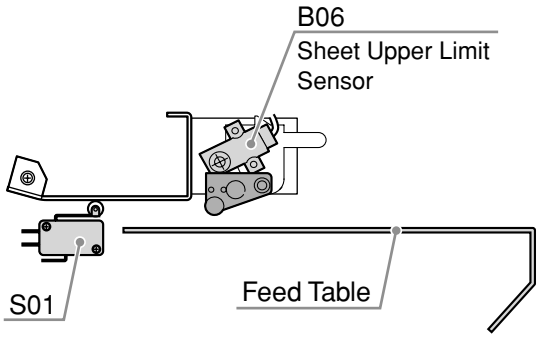


Fig.2 Sheet Upper Limit Sensor B06

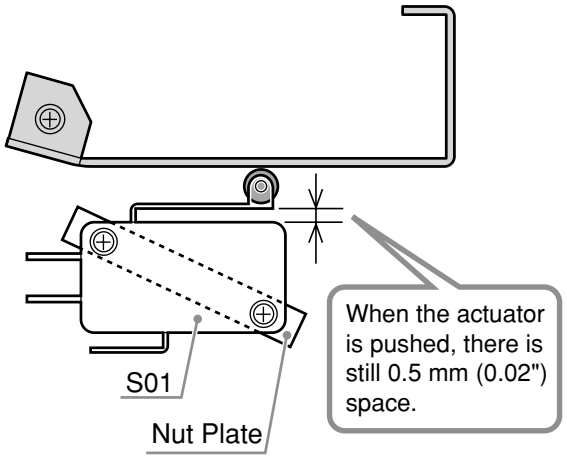


Fig.3 S01 Actuator Position

3-9 Feed Rotor Check

■ **PF-P330 has the same feed rotor that is installed on collating machine VAC-100.**

Check

① The cutouts on both edge of the vacuum pipe face the bottom. (Fig.2)

② The setting blocks (front and rear) faces at same angle and level to each other. (Fig.2)

③ The edge of the pipe positions 60 mm (2.4”) ahead from face of the setting block. (At front and rear) (Fig.2)

④ The shrink amount of the wave washer is 2 mm (0.08”.) (Fig.3)

[Additional Information]
The stretching force of the washer removes the gap in the thrust direction.

⑤ The torque on the setting block is 11kg/cm. (Fig.2)

⑥ The installed feed rotor rotates smoothly.

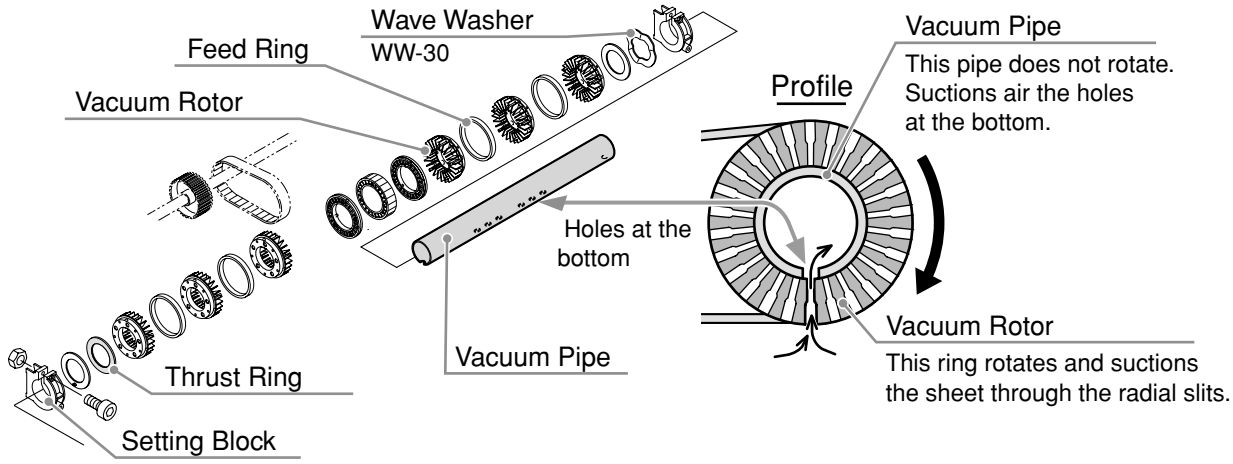


Fig.1 Feed Rotor Unit

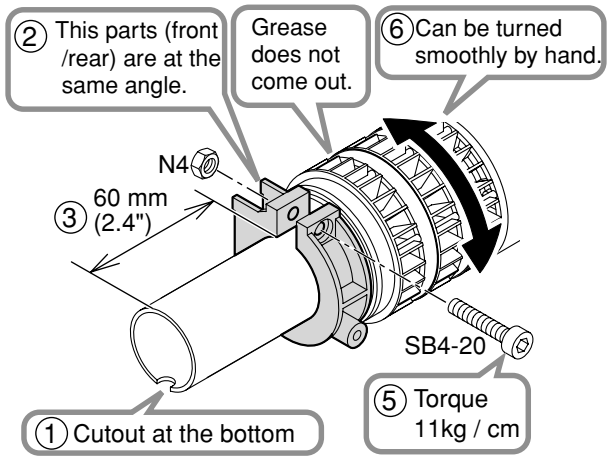

② This parts (front /rear) are at the same angle.
Grease does not come out.
⑥ Can be turned smoothly by hand.
N4
③ 60 mm (2.4")
SB4-20
⑤ Torque 11kg / cm
① Cutout at the bottom

Fig.2 Feed Roller (front)

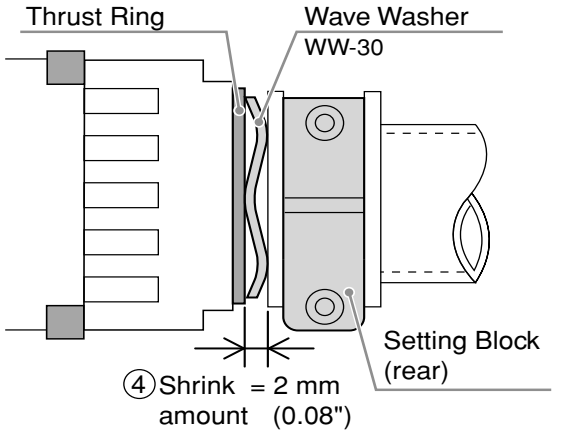


Fig.3 Wave Washer

3-10 Feed Ring Replacement

■ **The external diameter of the feed ring is bigger than the that of feed rotor by 0.3 mm (0.01".) [Diameter: by 0.6 mm (0.02")]**

When the feed ring is worn out and becomes smaller, it can not feed sheets correctly. (Fig.1)

■ **When replacing the feed ring, do not dismantle the feed rotor unit.**

1. Remove the rear cover.
2. Remove the hoses and conntecting parts.
   - Remove the hoses and connectors to the pump.
3. Remove the valve unit. (Fig.2)
4. Remove the vacuum plug. (Fig.3)
5. Pull out the feed rotor.
   - Displace the timing belt and pull out the vacuum roller.
6. Cut the feed ring using a nipper.
7. Install new feed rings. (Fig.4)
   - After installing the new feed ring, fit the ring on the groove.

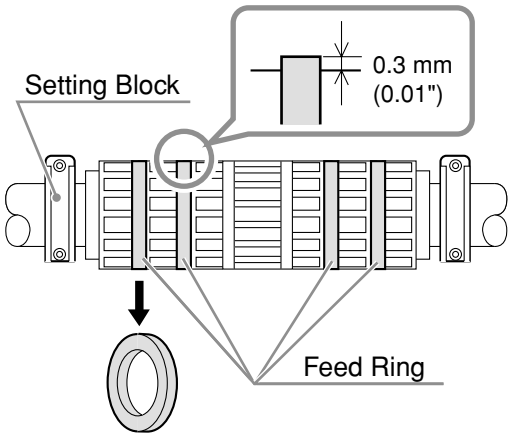


Fig.1 Feed Ring

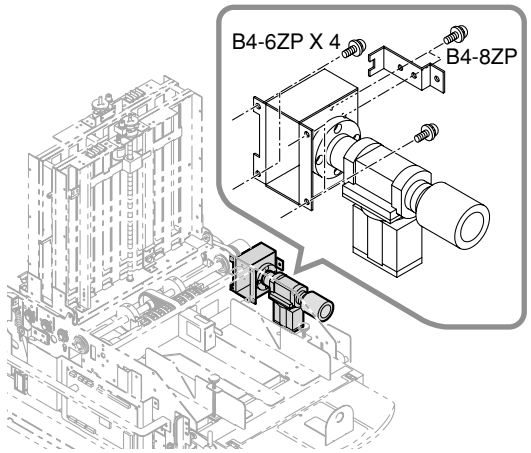


Fig.2 Valve AS

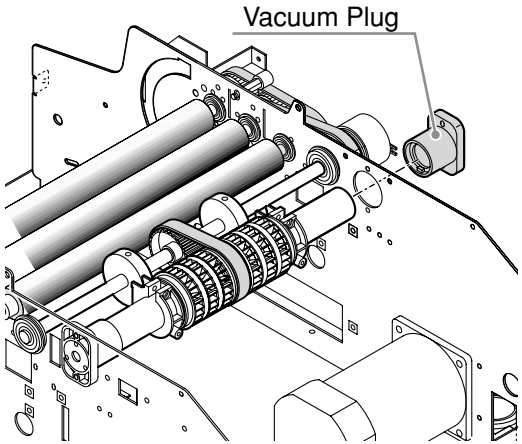


Fig.3 Vacuum Plug

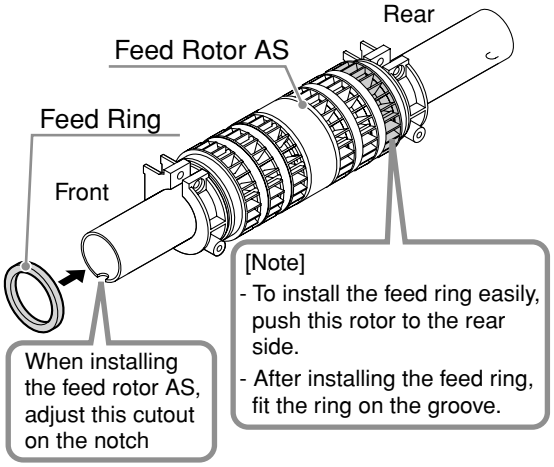

Rear
Feed Rotor AS
Feed Ring
Front
[Note]
- To install the feed ring easily, push this rotor to the rear side.
- After installing the feed ring, fit the ring on the groove.
When installing the feed rotor AS, adjust this cutout on the notch

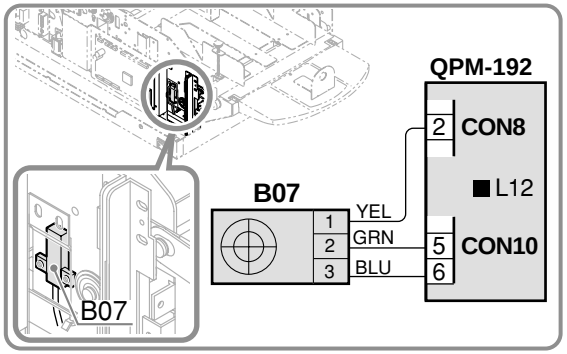
Fig.4 Feed Rotor AS

4. Mechanical Troubleshooting

4-1 Error Code 01 Is Indicated (= Feed Table Does Not Lower)

■ **The error code 01 is indicated when the feed table lower limit sensor B07 does not detect the feed table within 7 seconds after the signal to lower the table has been sent.**

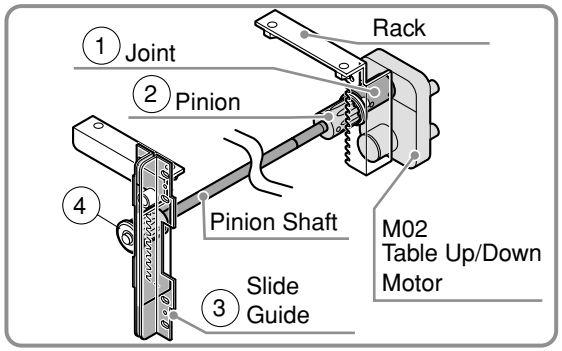
■ **When the feed table lowers and sounds loudly, the sensor B07 has a problem.**



Check the followings:

1. When a ferrous object is put on the detecting part of the B07, the LED L12 illuminates.
2. B07 is installed correctly.
3. The wiring and connection between B07 - CON10 on QPM192 is OK.

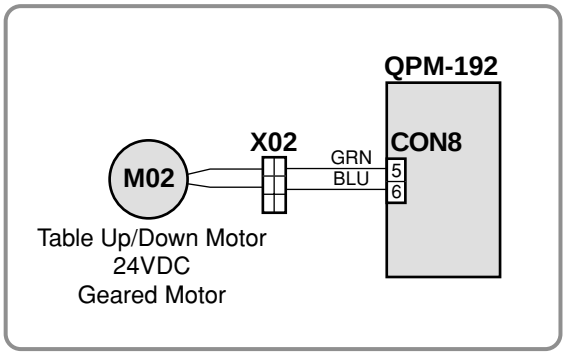
The feed table Up/Down mechanism malfunctions.



Check the following mechanism functions:

1. The fixing screws on the joint and the motor are fully tightened.
2. The fixing screws on two pinions are fully tightened.
3. The rack moves smoothly between the two slide guides.
4. The bearing for the pinion shaft positions correctly.

Table Up/Down motor M02 does not drive.



[Moving Up/Down the Feed Table]

Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

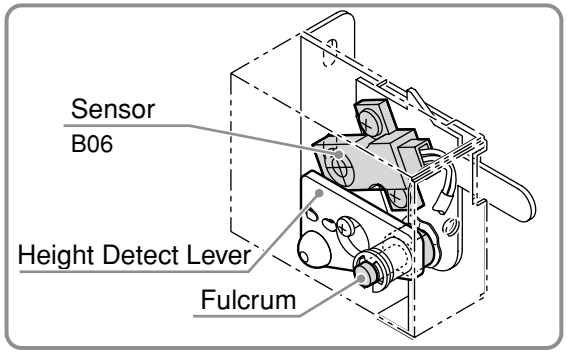
If the M02 does not drive, or does not try to drive, check the followings:

1. When the fixing screw on the joint is loosened and unloaded, the M02 drives.
2. The connectors of X02 and CON8 on QPM192 are OK.
3. The voltage of the X02 at the QPM192 side is 24VDC.
4. The voltage between the Pin5 and Pin6 of the CON8 on QPM192 is 24VDC.

4-2 Error Code 02 Is Indicated (= Feed Table Does Not Lift)

■ **The error code 02 is indicated when the feed table upper limit sensor B06 does not turn ON within 7 seconds after the signal to lift the table has been sent.**

The height detect lever of the sensor B06 is raised.

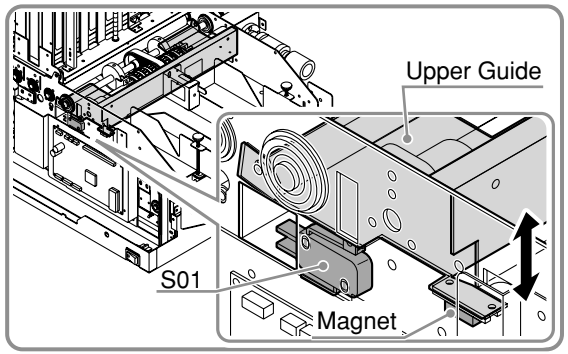


On the back of the height detect lever, a thin iron chip is attached. When the lever is raised by the sheets and detected by the sensor B06, the feed table stops.

Check the followings:

1. Installation and function of the height detect lever.
2. The installation of the iron chip on the back of the height detect lever, and the B06.
3. Wiring and connection between the B06 and Pin1, 2 of CON10 on QPM192.

The upper guide is raised.

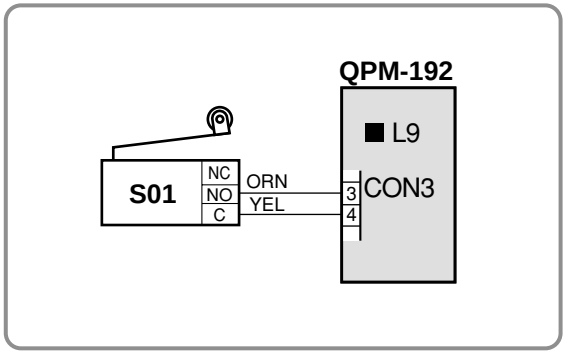


The upper guide is held by a magnet. When the upper guide is raised and remains there, the table upper limit switch S01 works and stop the feed table.

Check the followings:

1. An object on the feed table raises the upper guide.
2. An object sticks on the magnet that is installed under the upper guide, and it raises the upper guide.
3. The upper guide is deformed and positions apart from the S01.

Table upper limit switch S01 malfunctions.



Check the followings:

1. S01 is installed correctly as shown in Section [3-8: Table Upper Limit Switch S01 Position Adjustment] , Fig.3.
2. When raising the upper guide manually, the LED L9 on QPM192 lights OFF.
3. When raising the upper guide manually and pushing down the actuator of the S01, L9 illuminates.
4. Wiring and connection between the S01 and Pin3,4 of CON3 on QPM192 is OK.

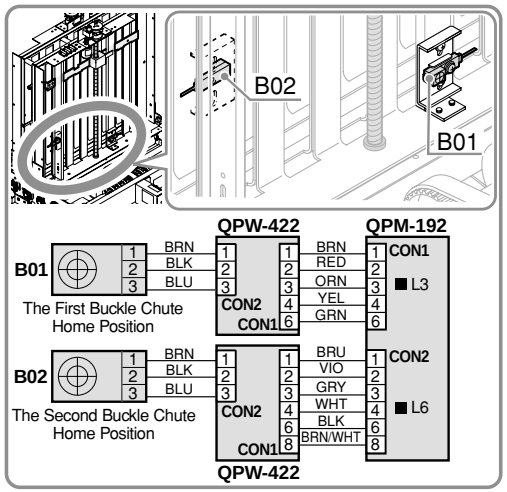
The feed table Up/Down mechanism malfunctions.

See Section [4-1: Error Code 01 Is Indicated] and check the same heading.

4-3 Buckle Chute Sounds Loudly and Q01/02 Are Actuated

Buckle stopper stops at the lower limit.

Buckle chute home position sensors B01/02 malfunction or are installed incorrectly.



■ If the buckle chute home position sensors B01/02 malfunction, the stopper goes farther than the home position until it stops at the lower limit and overloads.

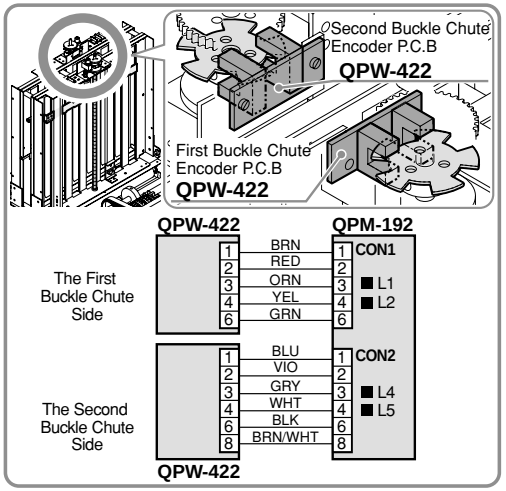
Then, circuit protector is actuated.

Check the followings:

1. B01/02 are installed correctly.
2. When a ferrous object is put on the detecting part of the B01/02, the sensor LED illuminates.
3. At the same time, LED L3 or L6 illuminates on QPM192.
4. Wiring and connection between B01/02 - QPW422 - CON1/CON2 on QPM192 is OK.

Buckle stopper stops at the upper limit.

A set of sensors on the encoder P.C.B. QPW422 malfunctions.



■ The couble of optical sensors on the encoder P.C.B. QPW422 read and counts the rotation. If the sensor malfunctions and they can not count the rotation, the stopper goes father than the set position until it stops at the upper limit. Then, the circuit protector is actuated.

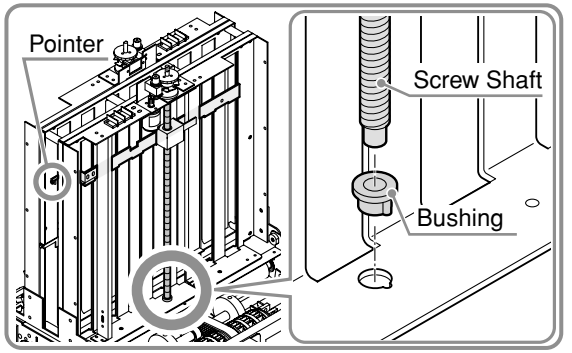
Check the followings:

1. Installation of the QPW422
2. Installation of the sensor plate
3. When the sensor plate is rotated manually, the LED L1 and L2 or L4 and L5 on QPM192 illuminates by turns.

■ If the sensors malfunction, replace the sensors and QPW422 together.

Buckle stopper stops on the way.

The guide shaft and the bushing of the stopper Up/Down mechanism malfunction.



Check the followings:

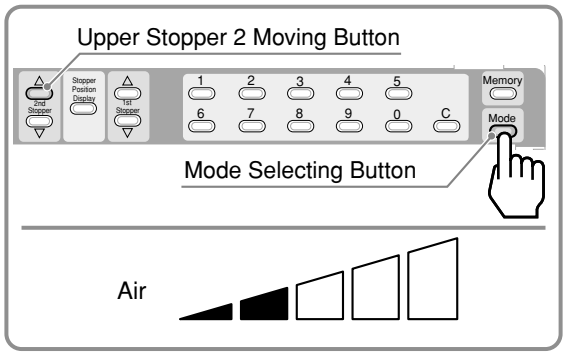
1. The bushing is not deformed and installed correctly.
2. The screw shaft is inserted into the bushing correctly.
3. The screw shaft does not bend and is not deformed.
   (Check the guide shaft by turning it manually.)
4. The pointer in the stopper position checking window is not caught with the buckle frame and stopped.

4-4 Feed Rotor Does Not Suction the Sheets

■ **When the M05 does not drive at all, go to Section [4-10: Motor Does Not Drive]**

■ **When the vacuum is weak, check if the air hose is installed correctly or it is not torn.**

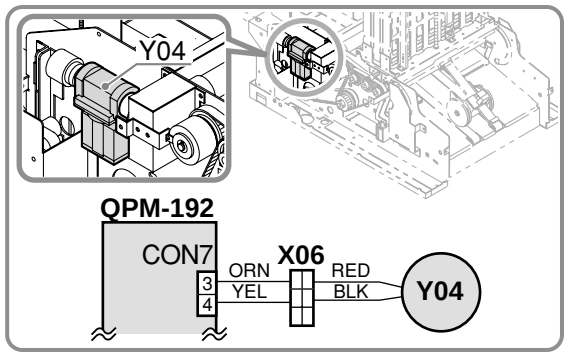
The rotation of the blower motor is set low.



■ Press the mode selecting button to show the [Air] screen on the display. By pressing the upper stopper 2 moving button, the rotation of the blower motor M05 is increased and vacuum becomes stronger.

- When the mode selecting button is pressed again, the setting is entered and the display goes back to the counter screen.

Valve Y04 malfunctions.



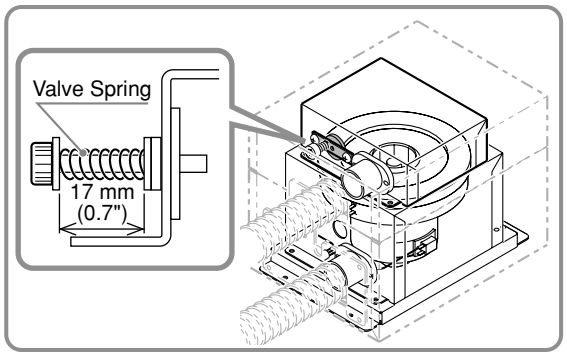
[Activating the Valve]

Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad, and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

Check the followings:

1. While the machine is performing the feeding operation described above, the valve sounds working.
2. While the machine is performing the feeding operation, 24VDC is measured at the connector X06.
3. Wiring and connection between Y04 - X06 - Pin3,4 of CON7 on QPM192 is OK.

The valve spring is weakened.



■ The valve spring prevents the pump from choking when the vacuum hose is clogged.

Check the followings:

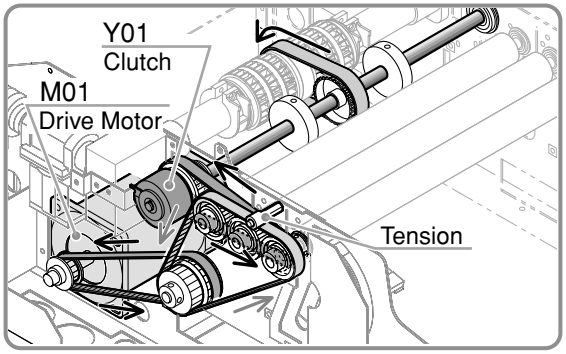
1. The valve spring is installed correctly.
2. The length of the valve spring is 17 mm (0.7") as shown above.

4-5 Feed Rotor Does Not Drive

Checking the feed rotor:

- Remove the feed rotor cover and the rear cover.
- Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

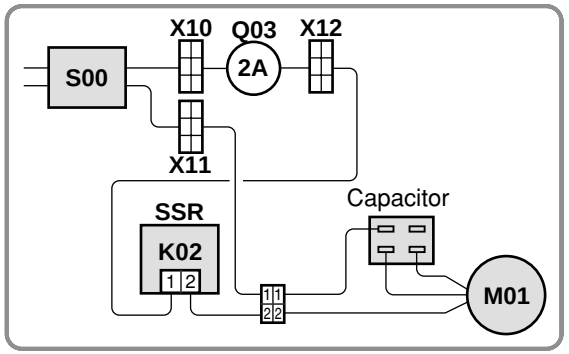
Drive belts are installed incorrectly.



Check the followings:

1. The four drive timing belts are installed and work correctly.
2. The tension presses the belt correctly.

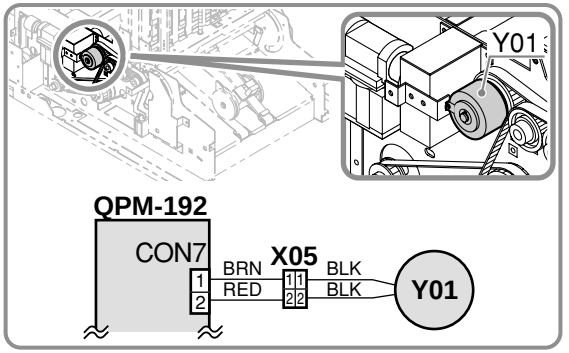
Drive motor M01 does not drive



Check the followings:

1. The circuit protector Q03 for M01 is not actuated.
2. The fixing screws on timing pulley of the M01 are fully tightened.
3. The voltage on the SSR terminal Pin2 and BL connector X11 is 115/230VAC.
4. Wiring and connection between S00 - M01 (shown above) is OK.

Clutch Y01 malfunctions



Check the followings:

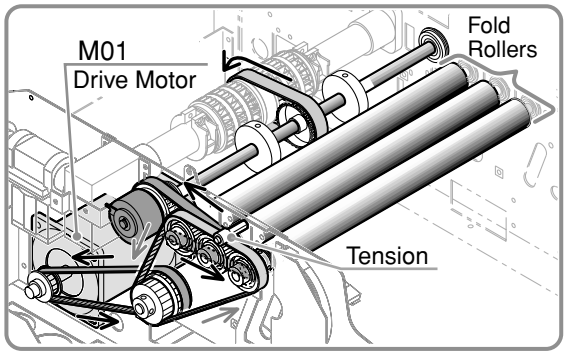
1. While the machine is performing the feeding operation, the clutch sounds working.
2. While the machine is performing the feeding operation, 24VDC is measured on connector X05.
3. Wiring and connection between Y01 - X05 - Pin1,2 of CON7 on QPM192 is OK.

4-6 Fold Rollers Do Not Rotate

Checking the fold roller rotating

- Remove the rear cover.
- Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

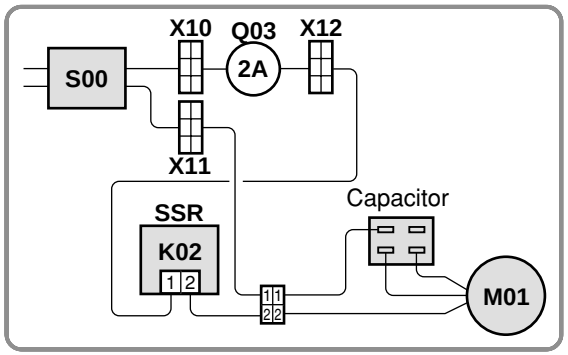
Drive belts are installed incorrectly.



Check the followings:

1. The drive timing belts are installed and work correctly.
2. The fixing screws on the timing pulley are fully tightened.
3. The tension presses the belt correctly.

Drive motor M01 does not drive

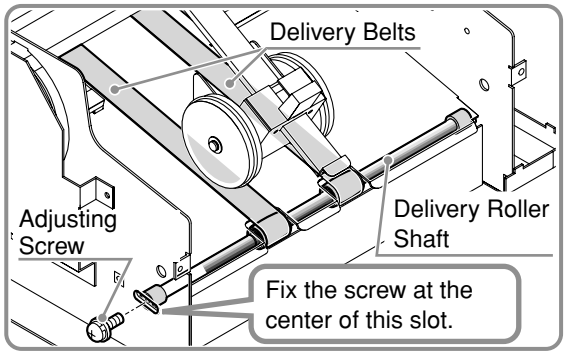


Check the followings:

1. The circuit protector Q03 for M01 is not actuated.
2. The fixing screws on timing pulley of the M01 are fully tightened.
3. The voltage on the SSR terminal Pin2 and BL connector X11 is 115/230VAC.
4. Wiring and connection between S00 - M01 (shown above) is OK.

4-7 Delivery Conveyor Belt Does Not Drive

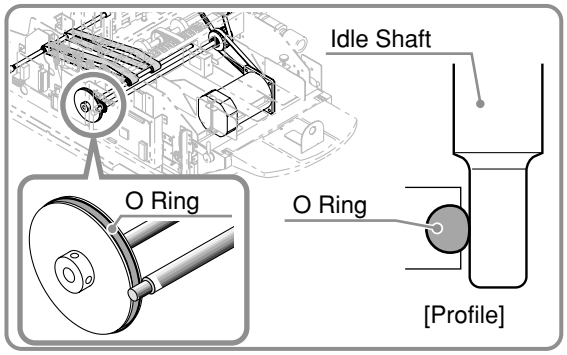
The tension of delivery belt is loosened.



Check the followings:

1. The adjusting screws for belt tension are set in correct position.
   - If the delivery belt is loosened even though the adjusting screw is set at the farther edge (exit side) of the slot, replace the belt.

O ring is cut, or slips on the grease.

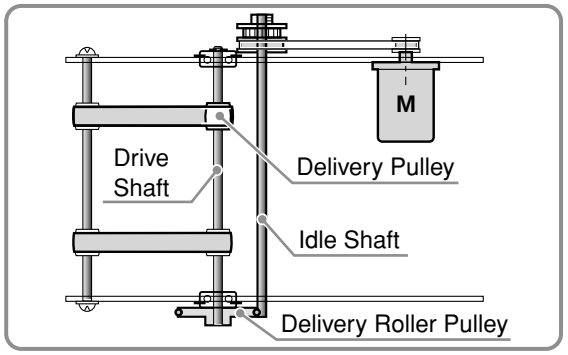


■ Power is transmitted from the idle shaft to the drive shaft through the O-ring, to make large reduction ratio.

Check the followings:

1. O ring is not cut or deformed.
2. Idle shaft does not slip on the grease.

Delivery belt drive mechanism malfunctions.



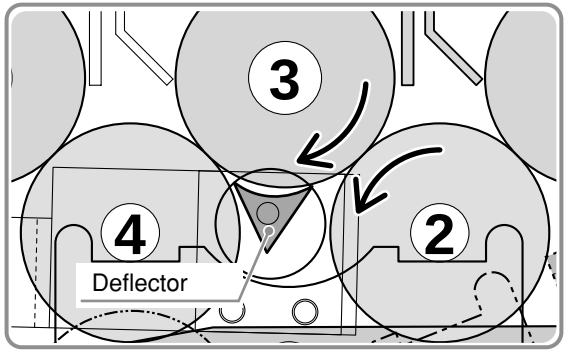
Check the followings:

1. The fixing screw on the timing pulley of the idle shaft at motor side is fully tightened.
2. The fixing screw on the delivery roller pulley is fully tightened.
3. The delivery roller pulley and the drive shaft do not run idle.

4-8 Deflector Malfunctions

■ **Deflector closes = Solenoid Y02 and Y03 turn ON during the single folding operation. To perform the single folding, the deflector is raised (closed) and the folded sheet is delivered to the conveyor.**

A jammed sheet is left inside.



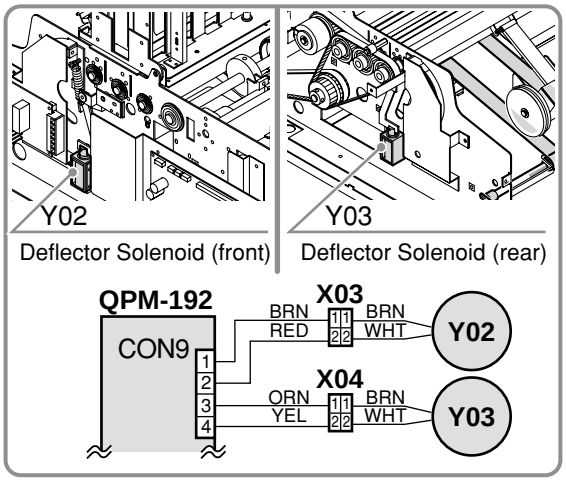
Check the followings:

1. There is a jammed sheet between the deflector and the fold roller.

[Check]

Turn OFF the power switch. Remove the second and fourth rollers and put your hand from the delivery side. Insert your nail between the roller and the deflector on the other (infeed) side, and slide to check the gap.

Solenoids Y02, Y03 malfunction.



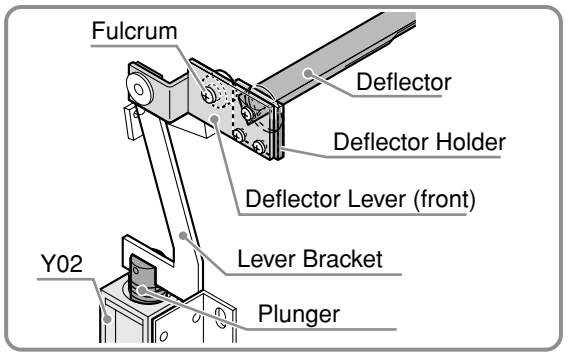
[Activating the Y02, Y03]

While the fold pattern is **NOT** set to single fold, keep pressing the [0] button and press the [Feed Gap] button. The Y02 and Y03 turn ON. To turn OFF the Y02, Y03, turn OFF the power switch.

Check the followings:

1. When activating the Y02 and Y03 (described above), the plungers are pulled in.
2. When activating the Y02 and Y03, 24VDC is measured on the connector X03 and X04.
3. Wiring and connection between the Y02, Y03 - X03, X04 - Pin1, 2, 3, 4 of CON9 on QPM192 is OK.

Deflector mechanism malfunctions.



[Additional Information]

In case either of Y02 or Y03 malfunctions, the deflector can be switched by the other solenoid. Although, that makes the space between the deflector and roller at the side where the solenoid malfunctions, and causes sheet jam.

Check the followings:

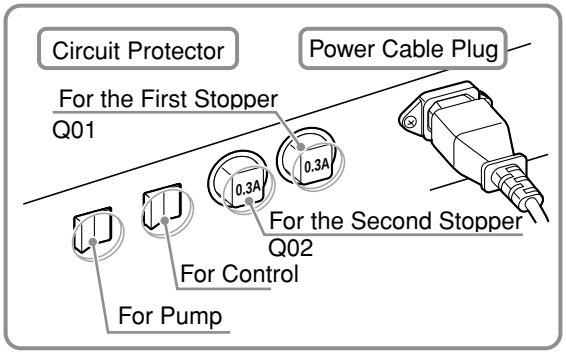
1. Fulcrum screw is fully tightened.
2. The connection of the lever bracket and the plunger.
3. While the power is OFF, the plunger can be moved manually and smoothly.
4. The spring on the plunger is not cut.
   The spring is not deformed nor fall into the plunger hole.
5. The fixing screws of Y02 and Y03 are fully tightened.

4-9 Buckle Stopper Does Not Move

■ **The circuit of the motors M03 and M04 that moves the buckle stopper includes the circuit protector Q01 and Q02.**

■ **When the buckle chute sounds loudly, see Section [4-3: Buckle Chute Sounds Loudly and Q01/02 is Actuated]**

The circuit protector Q01 or Q02 is actuated.

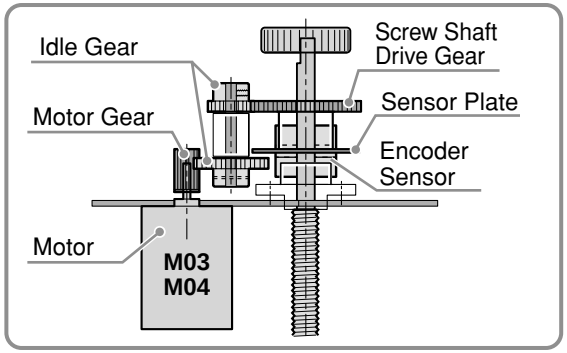


■ The circuit protector is the heat accumulating type.

To reset the circuit protector, wait until it is cooled down.

- In case the circuit protector is actuated again after resetting, the motor drive section locks or the M03 or M04 is short circuited.

Buckle Chute Mechanism Malfunctions.



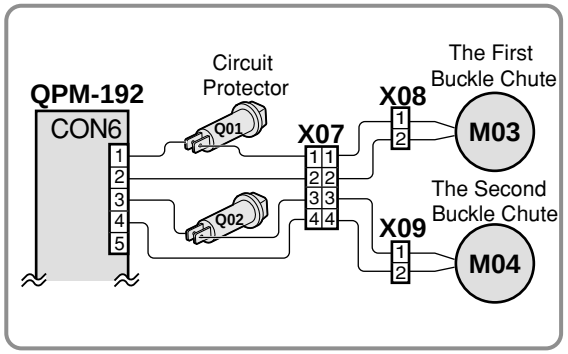
■ The motor gear is fixed with the screw SS3-4.

If the motor M03 and M04 does not drive even when this screw is loosened, there is a problem in the electrical circuit.

Check the followings:

1. The fixing screws on the motor gears are fully tightened.
2. The cog of the gears mesh correctly.
3. The motor gear can be turned manually and smoothly.
4. The screw shaft is not deformed and it is inserted into the bushing correctly.

The voltage on M03 and M04 is not 24VDC.



[Moving the buckle chute stopper singly]

Turn OFF the power switch. Keep pressing the [1] button on the numeric key pad, turn ON the power switch. The machine starts moving the buckle chute stopper. (To stop, turn OFF the power switch.)

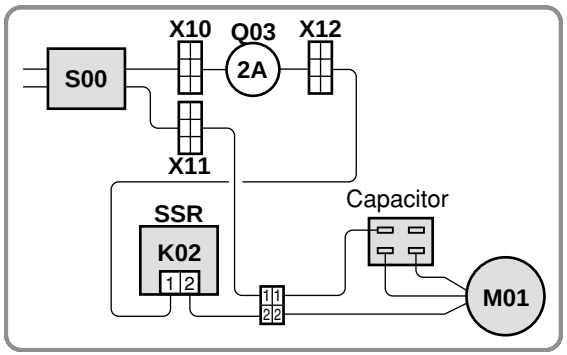
Check the followings:

1. During moving the buckle chute stopper (described above), 24VDC is measured on X08 and X09.
2. 24VDC is measured between the Pin1 and 2, or Pin3 and 4 of CON6 on QPM192.
3. There is a continuity between the terminals of the circuit protector when it is pushed in.

4-10 Motor Does Not Drive

1

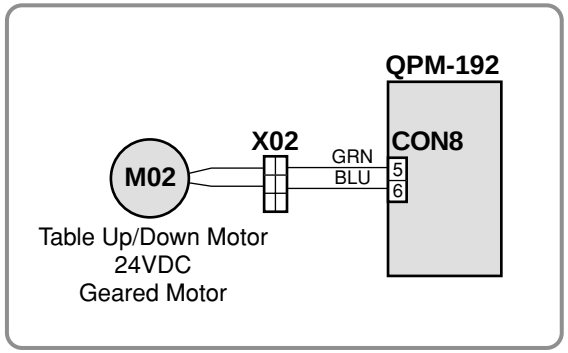
Drive motor M01 does not drive



Check the followings:

1. The circuit protector Q03 for M01 is not actuated.
2. The fixing screws on timing pulley of the M01 are fully tightened.
3. The voltage on the SSR terminal Pin2 and BL connector X11 is 115/230VAC.
4. Wiring and connection between S00 - M01 (shown above) is OK.

Table Up/Down motor M02 does not drive



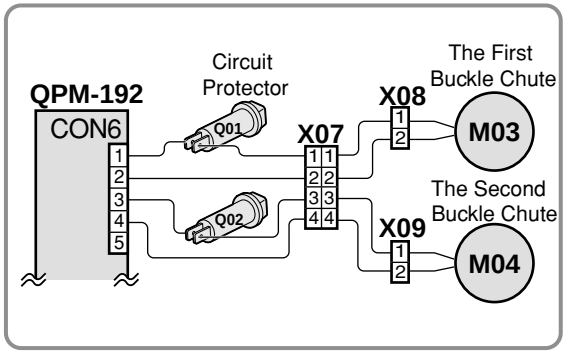
[Moving Up/Down the Feed Table]

Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

If the M02 does not drive, or does not try to drive, check the followings:

1. When the fixing screw on the joint is loosened and unloaded, the M02 drives.
2. The connectors of X02 and CON8 on QPM192 are OK.
3. The voltage of the X02 at the QPM192 side is 24VDC.
4. The voltage between the Pin5 and 6 of the CON8 on QPM192 is 24VDC.

Buckle Chute Motors M03/M04 do not drive



[Moving the buckle chute stopper singly]

Turn OFF the power switch. Keep pressing the [1] button on the numeric key pad, turn ON the power switch. The machine starts moving the buckle chute stopper. (To stop, turn OFF the power switch.)

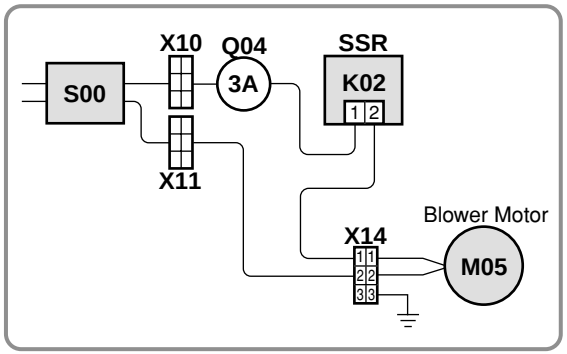
Check the followings:

1. During moving buckle chute stopper (described above), 24VDC is measured on X08 and X09.
2. 24VDC is measured between the Pin1 and 2, or Pin3 and 4 of CON6 on QPM192.
3. There is a continuity between the terminals of the circuit protector when it is pushed in.

4-10 Motor Does Not Drive

2

Blower motor M05 does not drive.



[Driving the Blower Motor M05]

Turn OFF the power switch. Keep pressing the [5] button on the numeric key pad and turn ON the power switch. The blower, valve, clutch and table Up/Down motor repeat the cycle of feeding operation. (To stop, turn OFF the power switch.)

Check the followings:

1. The connecter between the M05 and the machine is fully connected.
2. Circuit protector Q04 is not actuated.
3. The voltage between the BL terminal X10 and X11 is 115/230VAC.
4. When the air amount is set at maximum, the voltage between the Pin1 and 2 of terminal X14 is about 115/230VAC.

- The motor for cleaner shown as (13) to the right is used for the blower motor.
- This motor has limited longevity and needs to be replaced by about 1,000 hours. This is because that the carbon brush inside the motor is worn out.
- The blower motor can not be replaced singly. Replace the whole blower box.

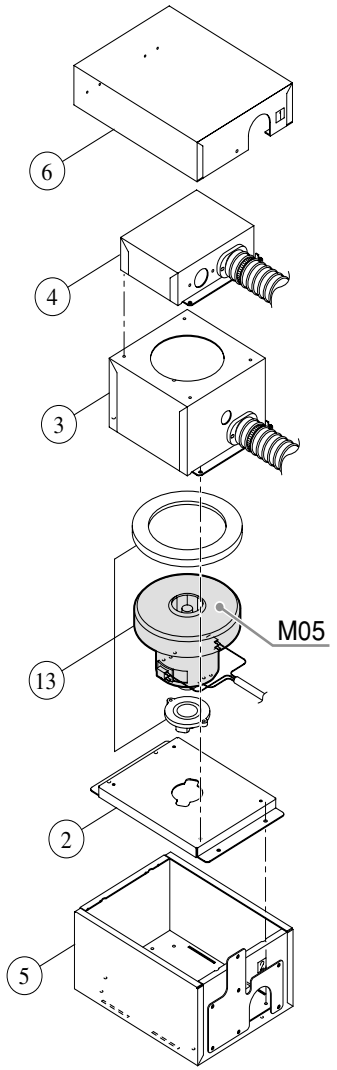
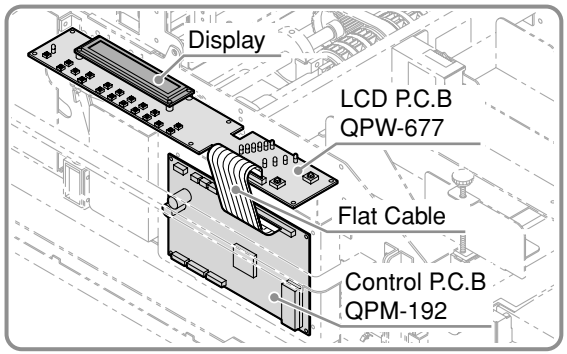


Fig.1 Blower Box

4-11 Display Does Not Show Any Image

When selecting sheet size or fold pattern, the machine does not sound activating.

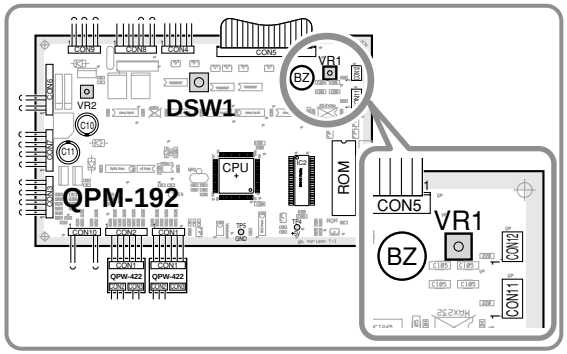


When no sound can be heard

Check the followings:

1. The flat cable (shown above) is fully connected.
   - The display panel is assembled with the LCD P.C.B. QPW677. Therefore, to replace the display panel, replace the QPW677.
     If the problem is still not resolved, replace the control P.C.B. QPM192.

The volume for panel brightness is turned to Min.



■ The brightness of the display panel is adjusted by the volume VR1 on QPM192 (shown above.)

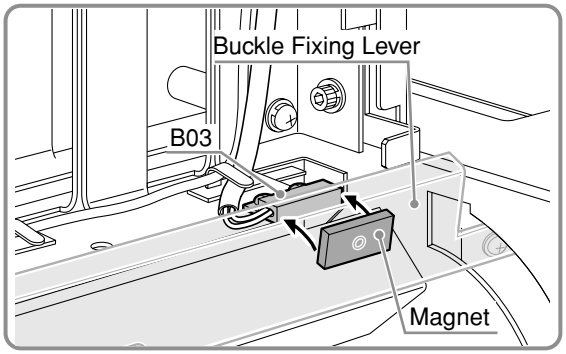
When replacing the QPM192 and the VR1 is turned to Min, the display can not show any image.

[Additional Information]
Rotary Switch DSW1 Setting

0	Not Used	
1	Japanese	/mm
2	English	/inch
3	English	/mm

4-12 Error Message “Close Buckle” Is Shown (Even though it is closed)

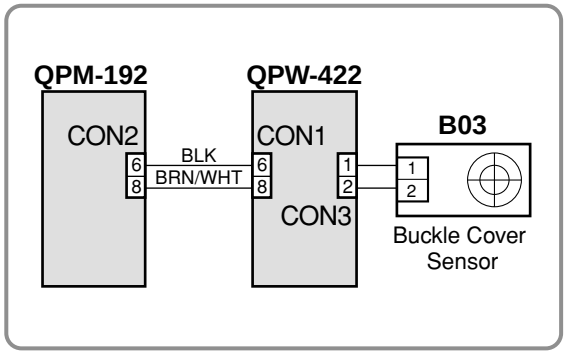
The buckle cover sensor B03 is installed incorrectly.



Check the followings:

1. The buckle fixing lever is fully closed.
2. The fixing screw on the sensor B03 is fully tightened.
3. The sensor connector is fully connected.
4. Magnet is installed correctly.

The buckle cover sensor B03 malfunctions.



Check the followings:

1. Remove the magnet that holds the buckle fixing lever, and put it on the sensor B03 directly. Check that the LED L7 on the QPM192 illuminates.
2. Wiring and connection:
   - Between the B03 and CON3 on QPW422
   - Between the Pin6, 8 of CON1 on QPW422 and Pin6, 8 of CON2 on QPM192

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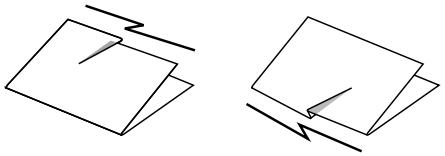
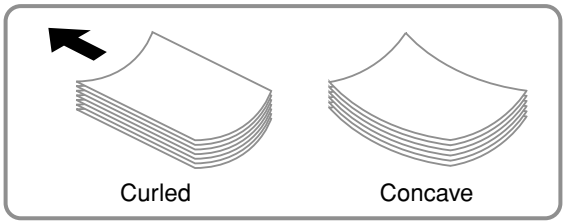
5. Folding Quality Troubleshooting

5-1 Wrinkled Sheets



The sheets are curled or concave.

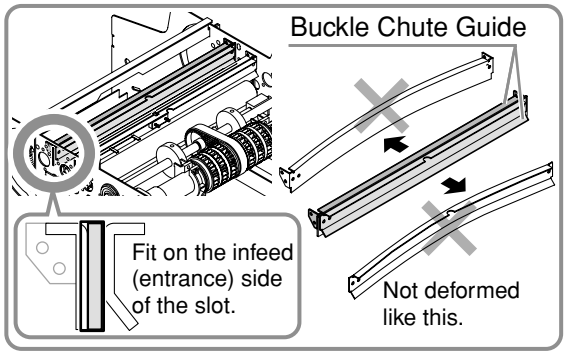


- The sheets immediately after printed or left in the humid place may shape as shown above. If those shaped sheets pass through the rubber rollers, that may cause wrinkles on the folded sheet. Instruct the operator to flatten out or dry the sheets before folding.

[Additional Information]

- **The wrapping of the sheets blocks the humidity. If the wrapping is opened and left for a long time, the sheet becomes damp around but dry inside. Therefore, the sheet becomes concave.**
- **The recycled papers are more likely to be effected by the humidity.**

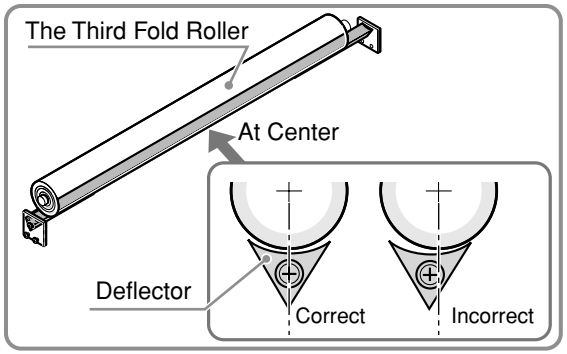
The buckle chute guide is installed incorrectly or deformed.



- When the buckle chute at the infeed (entrance) side is deformed as shown above, the sheet may hit the guide and cause wrinkles. If the buckle chute guide is deformed by more than 0.5 mm (0.02”), correct the buckle chute guide.
  If the jammed sheet is pulled by force to remove, that may deform the guide.

- The buckle chute guide is installed on the side plate by inserting the edge of the 1.6 mm (0.06”) thickness spacer into the 2 mm (0.08”) width slot. The spacer should be fixed on the infeed (entrance) side of the slot. If not, that changes the position of the buckle chute and results in the wrinkles on the folded sheet.

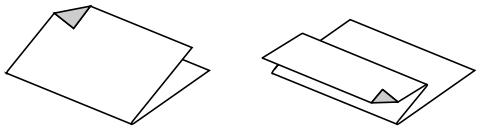
The deflector is deformed.



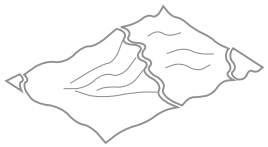
- If the deflector is deformed and does not align with the fold roller at the center, the sheet path is blocked there and may cause wrinkles.
  Remove the deflector and flatten it out. [Distortion: within 0.1 mm (0.004”)]

- When removing the jammed sheet on the deflector, if it is pulled by force, that may deform the deflector. Instruct the operator how to remove the jammed sheet.

5-2 Folded Corners



The jammed sheets are left on the sheet path.

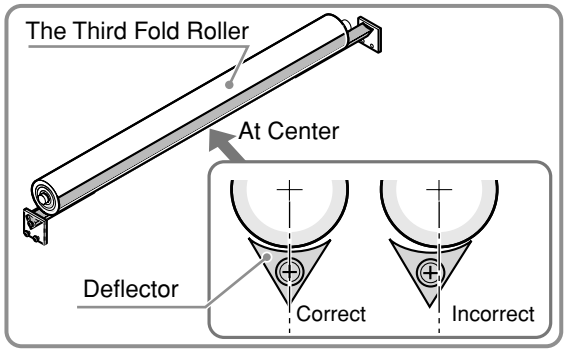


Piece together the jammed sheet.

- When removing the jammed sheet, remove it completely without any scraps left inside.
  When the scrap of paper is left on the sheet path, the delivered sheet hits it and the corners is folded (dog ear.)

- Instruct the operator to piece together the torn scraps and make sure to remove all the jammed sheet completely.

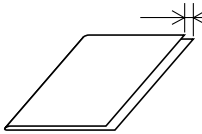
The deflector is deformed.



- If the deflector is deformed and does not align with the fold roller at the center, the sheet path is blocked there and may cause wrinkles.
  Remove the deflector and flatten it out. [Distortion: within 0.1 mm (0.004”)]

- When removing the jammed sheet on the deflector, if it is pulled by force, that may deform the deflector. Instruct the operator how to remove the jammed sheet.

5-3 Sheet Edges Do Not Align



The sheet edges do not align even though it is folded in correct setting.

The sheet is static.

- The sheet immediately after printed by the laser printer at high printing speed is hot and dry because it is compressed and delivered by the toner transferring rollers.

  Especially in winter season, the sheet described above becomes static and it sticks on the metal part, such as buckle chute, and can not reach the buckle chute stopper. In case of the short folding pattern that the large part of the sheet enters the buckle chute, the sheet is more likely to be effected by the statics.

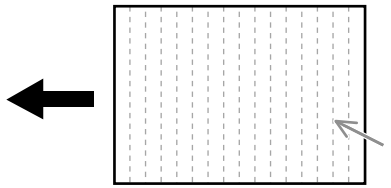
[Remedy]

- The sheet printed by the high speed laser printer should be left for a while to cool it down and adapt to the temperature and humidity before folding.
- The static is reduced by jogging the sheet using the jogging machine.
- Lower the printing speed on the laser printer.
- Reduce the statics on the laser printer.

Jammed sheet is left in the buckle chute.

- When removing a jammed sheet, if a scrap of sheet is left on the back of the buckle chute, it works as a stopper and the sheet is folded incorrectly.

The sheet has the cross grain direction.



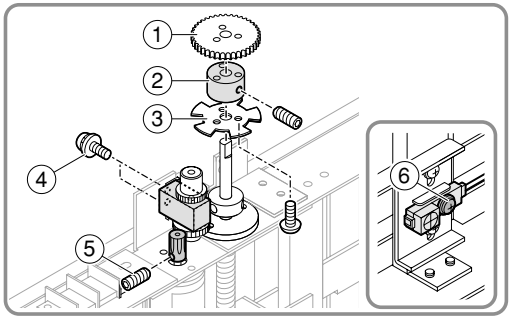
- The cross grain direction sheet is easy to break against the feed direction. If there is another problem such as static, the sheet may not reach the stopper and cause incorrect folding.

Sheet size is incorrect.

- Measure the sheet.
  The correct sheet size: (Long Edge)

A3	420 mm
A4	297 mm
B3	515 mm
B4	364 mm

Stopper drive mechanism malfunctions.



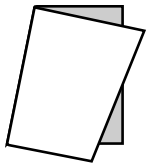
Check the followings:

① The fixing screw on the drive gear is fully tightened.
② The fixing screw on the gear collar is fully tightened.
③ The sensor plate and ① is tightly connected.
④ The fixing screw on idle block is fully tightened.
⑤ The fixing screw on the motor gear is fully tightened.
⑥ The fixing screw on the stopper home position sensor is fully tightened.

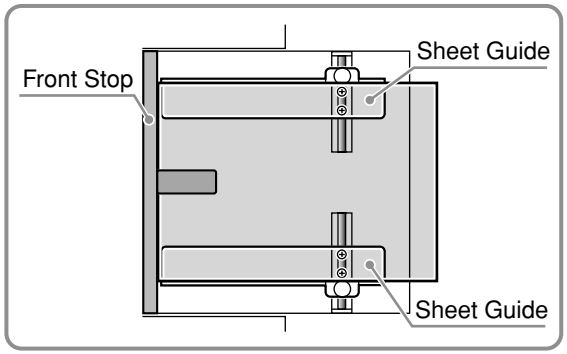
[Additional Information]

The stopper home position is set using the 64 gsm sheet as a standard. Therefore, when using thinner sheet or cross grain direction, home position does not match.
It is useful to memorise the stopper setting that is adjusted for the other types of sheet using the stopper adjusting knob.

5-4 Sheet Is Folded Askew



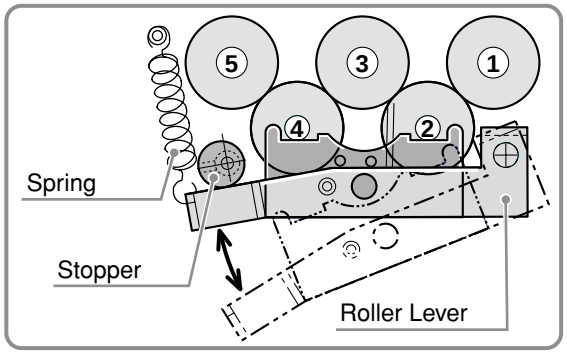
The sheet guide is not at right angle against the front stop or not parallel each other.



- When a sheet is loaded so that the sheet edge touches the front stop and the sheet guides are aligned with the sheet edge, the guides should be parallel to the sheet.

- If the sheet guides are not parallel to the sheet, see Section [3-1: Sheet Guides Right Angle and Parallel Adjustment] and adjust the sheet guide.

Roller pressure (spring force) is not even at front and rear.

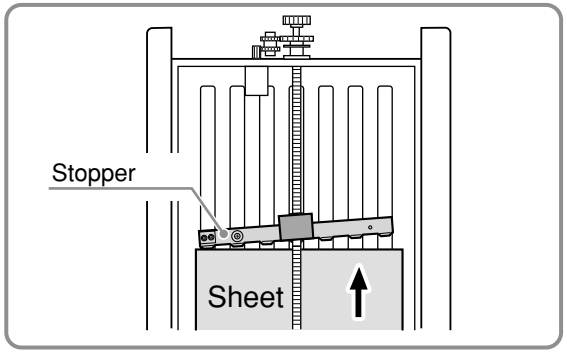


- The pressure of the fold roller is produced by the spring of the roller lever. When installing the second and fourth fold rollers, if the roller lever positions incorrectly but is pulled up by force, the spring will be extended. In case that, replace the spring.

- There should be a gap of 0.1 mm (0.004”) between the stopper and roller lever (at front and rear), when the lever is pulled up.

  If there is no gap in-between, the pressure of the fold roller changes. See Section [3-7: Stopper (Roller Lever) Position Adjustment] .

Stopper is askew.



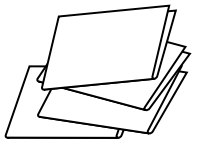
- To adjust the stopper tilt angle, fold a sheet and adjust the stopper depending on the shift of the folded sheet. See Section [3-5: Buckle Chute Stopper Parallel Adjustment].

Fold rollers are contaminated.

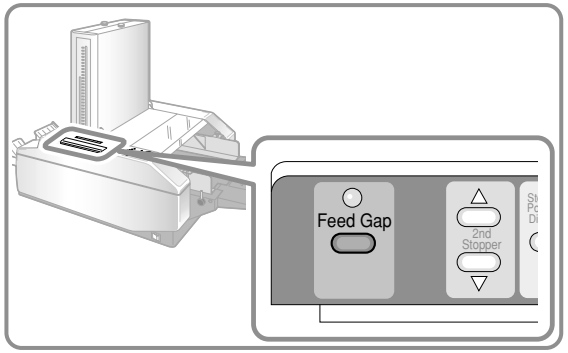
■ Especially the stencil printed sheet, if the sheet is folded before it drys out, the ink adheres to the fold roller and changes the friction and results in incorrect folding.

- Instruct the operator to clean the fold rollers following the instruction of “Maintenance” in the operation manual .

5-5 Sheets Are Not Arranged On the The Delivery



Folded sheets stick each other because of static.

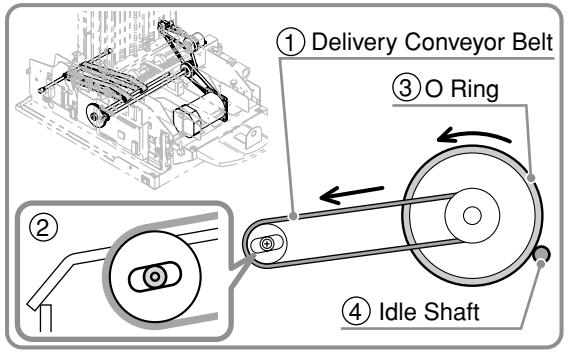


- If the sheets are static, they stick each other and do not arrange.

  Fan the sheet well before folding and reduce the static.

  If the sheet is still effected by the static, run the machine by Feed Gap operation.

Delivery conveyor belt slips.



Check the followings:

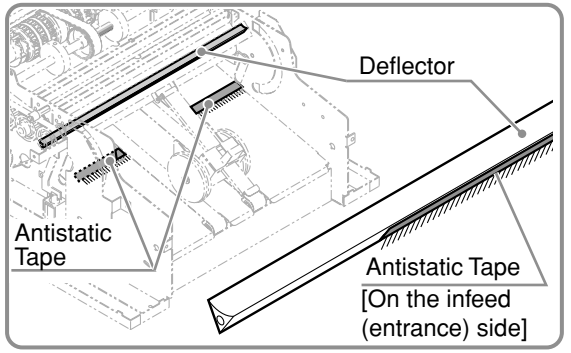
① The delivery conveyor belt is not cut.

② The delivery conveyor belt is tensed correctly. (See Section 3-6 Belt Tension Adjustment)

③ The O ring on the delivery roller pulley is not cut.

④ Grease is not applied on the O ring or idle shaft causing slip.

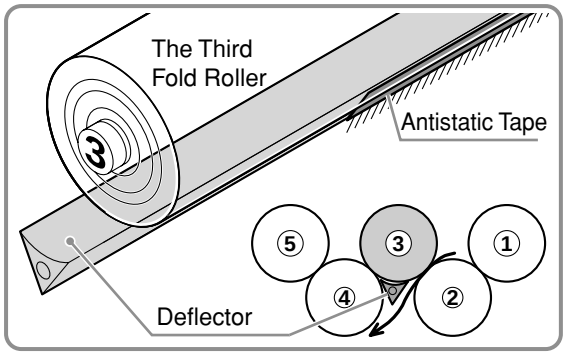
Antistatic tapes come off.



- The antistatic tapes are attached on the infeed (entrance) side of the deflector and delivery (exit) side of the delivery conveyor.

5-6 Sheet Jams at the Deflector

Antistatic tape on the deflector comes off.

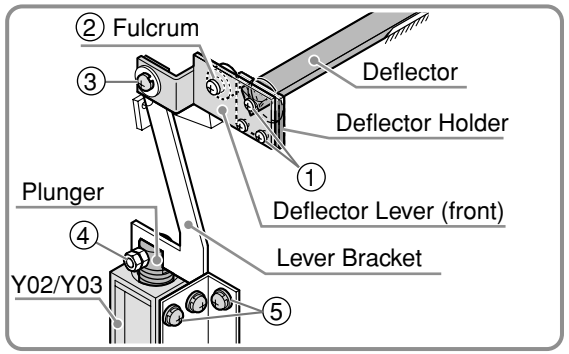


- The antistatic tape is attached on the deflector as shown above.

  When the deflector is raised (when the solenoid Y02 is ON), the edge of the sheet that comes through the second and third fold roller touches the antistatic tape and is delivered.

- Check the attachment of the antistatic tape by inserting hand from the delivery conveyor side and touching the rear (infeed) side of the deflector.

Deflector mechanism malfunctions.

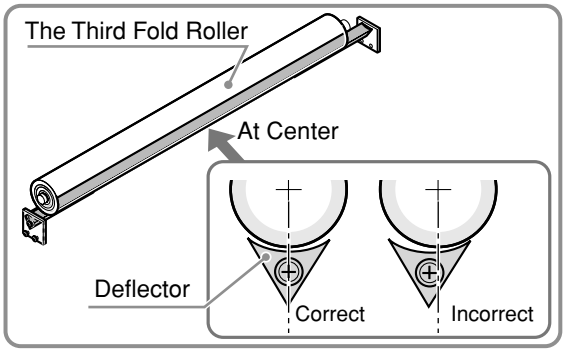


Check the followings:

① The fixing screws on the deflector are fully tightened.
② The fulcrum screw on the deflector lever is fully tightened.
③ The connecting screw on the deflector lever is fully tightened.
④ The screw connecting the plunger of the solenoid Y02/Y03 and the lever bracket is fully tightened.
⑤ The fixing screws on the solenoid Y02/Y03 are fully tightened.

- When pushing in the plunger of the Y02/Y03 manually, the deflector moves smoothly.
- When changing the fold patterns by pressing the fold pattern selecting button, the Y02/Y03 moves correctly.

The deflector is deformed.

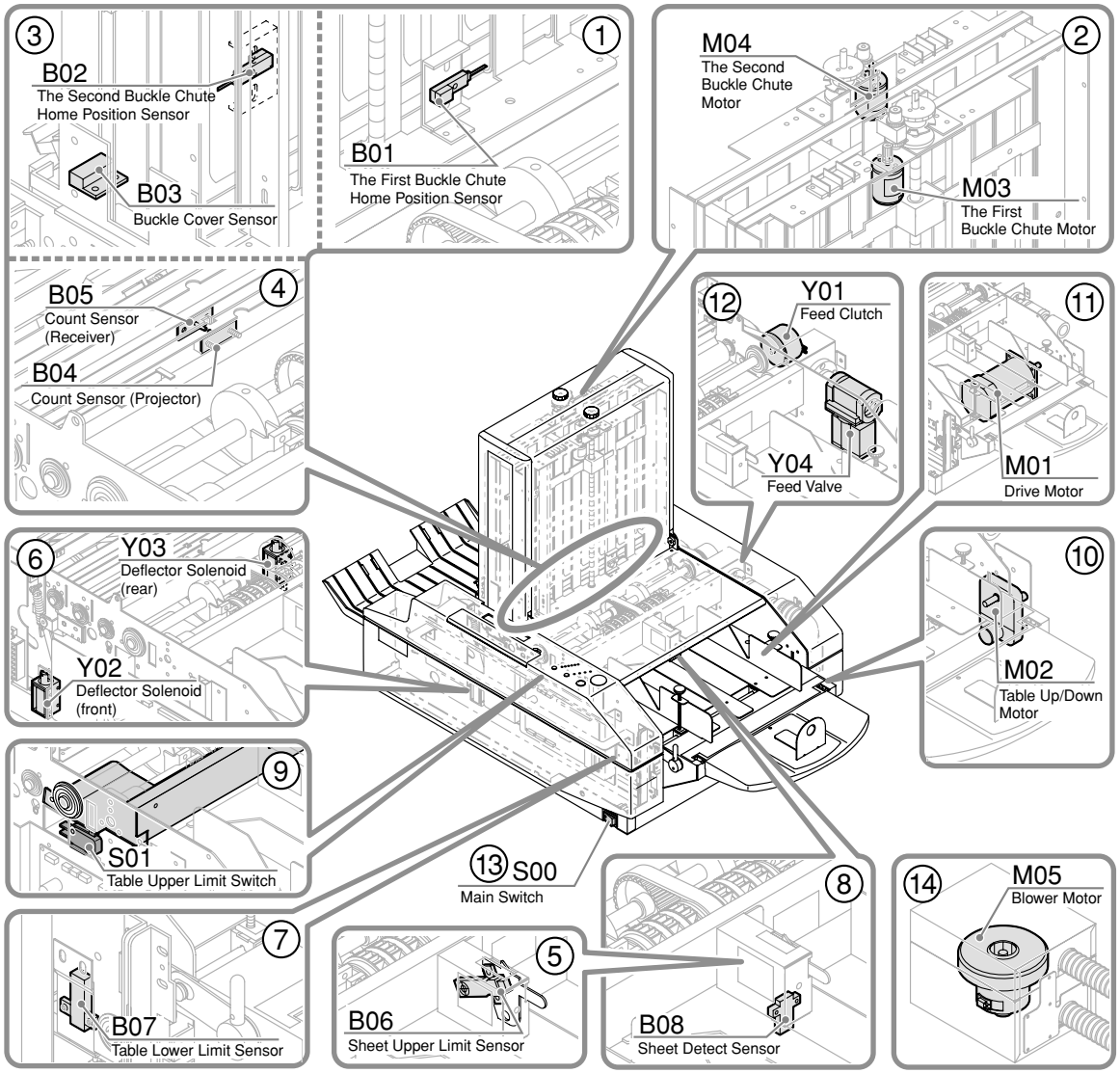


- If the deflector is deformed and does not align with the fold roller at the center, the sheet path is blocked there and may cause wrinkles.
  Remove the deflector and flatten it out. [Distortion: within 0.1 mm (0.004")]

- When removing the jammed sheet on the deflector, if it is pulled by force, that may deform the deflector. Instruct the operator how to remove the jammed sheet.

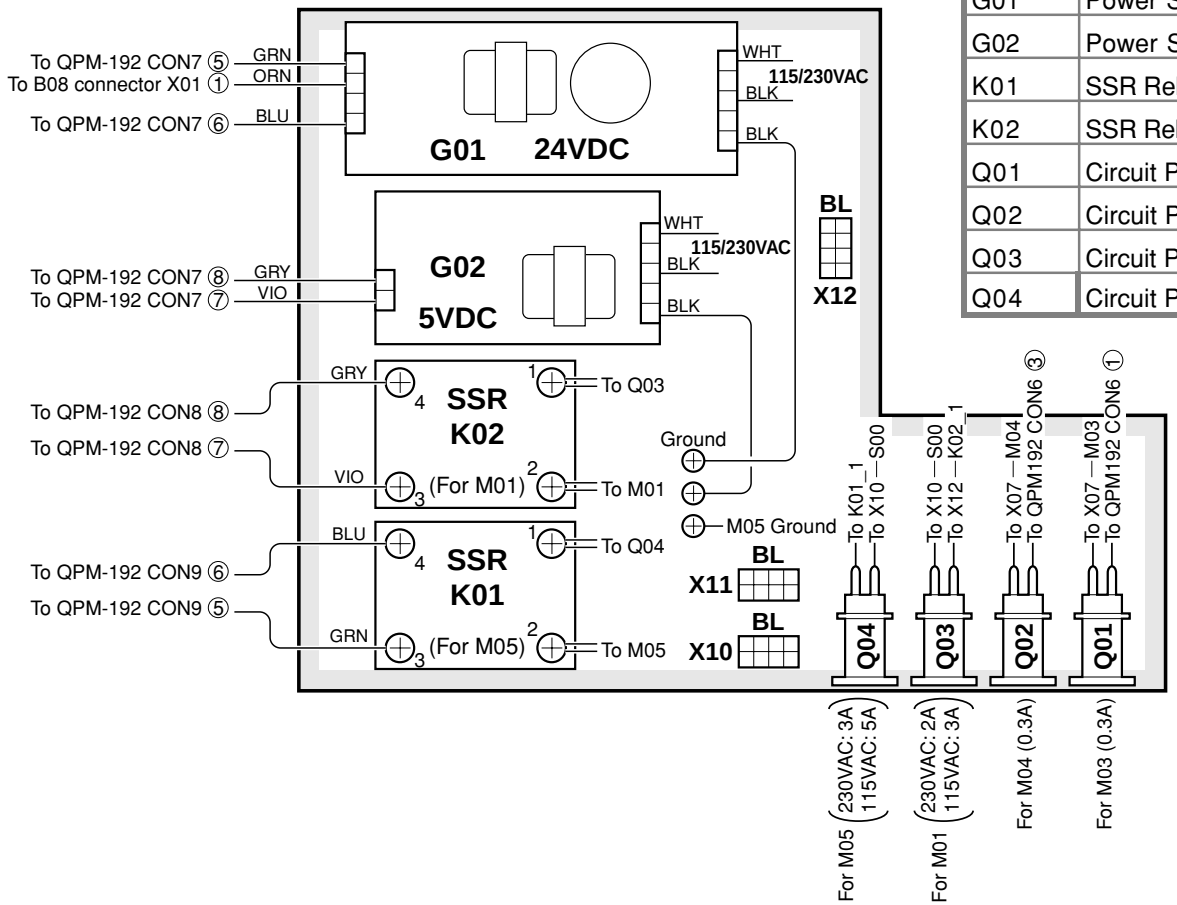
6. Electrical Circuit

6-1 Electrical Parts Leyout and Descripton

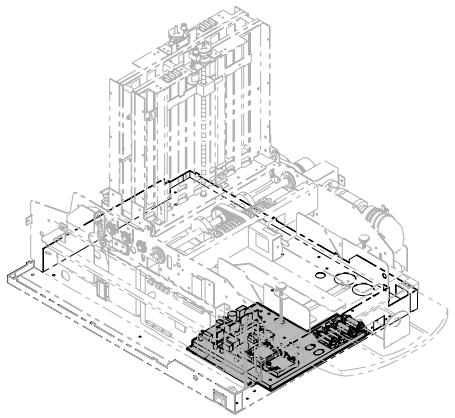


Code		Name	
B01	①	The First Buckle Chute Home Position Sensor	
B02	③	The Second Buckle Chute Home Position Sensor	
B03	③	Buckle Cover Sensor	
B04	④	Count Sensor (Projector)	
B05	④	Count Sensor (Receiver)	
B06	⑤	Sheet Upper Limit Sensor	
B07	⑦	Table Lower Limit Sensor	
B08	⑧	Sheet Detect Sensor	
M01	⑪	Drive Motor	Single Phase 90W
M02	⑩	Table Up/Down Motor	24VDC Geared Motor
M03	②	The First Buckle Chute Motor	24VDC DC Motor
M04	②	The Second Buckle Chute Motor	24VDC DC Motor
M05	⑭	Blower Motor	Single Phase Commutator Motor
Y01	⑫	Feed Clutch	24VDC
Y02	⑥	Deflector Solenoid (front)	24VDC
Y03	⑥	Deflector Solenoid (rear)	24VDC
Y04	⑫	Feed Valve	24VDC
S00	⑬	Power Switch	
S01	⑨	Table Upper Limit Switch	

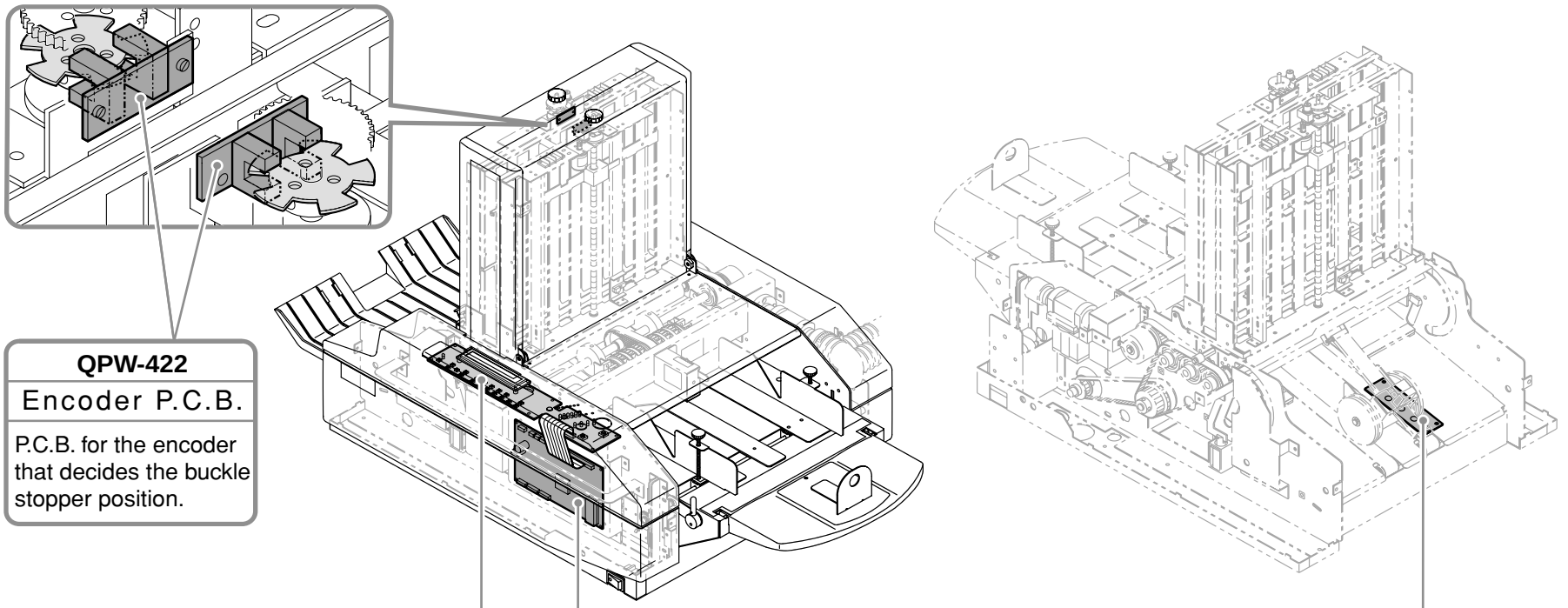
6-2 Electrical Chassis Layout and Description



Code	Name	
G01	Power Supply	24VDC
G02	Power Supply	5VDC
K01	SSR Relay	For Blower Motor M05
K02	SSR Relay	For Drive Motor M01
Q01	Circuit Protector	For the First Buckle Chute Motor M03
Q02	Circuit Protector	For the Second Buckle Chute Motor M04
Q03	Circuit Protector	For M01, G01, G02
Q04	Circuit Protector	For Blower Motor M05



6-3 P.C.B. Layout and Description



QPW-422

Encoder P.C.B.

P.C.B. for the encoder that decides the buckle stopper position.

QPW-677

LCD P.C.B.

P.C.B. that receives the signal from the buttons and shows images on the panel.

QPM-192

Control P.C.B.

Main P.C.B. that controls the machine.

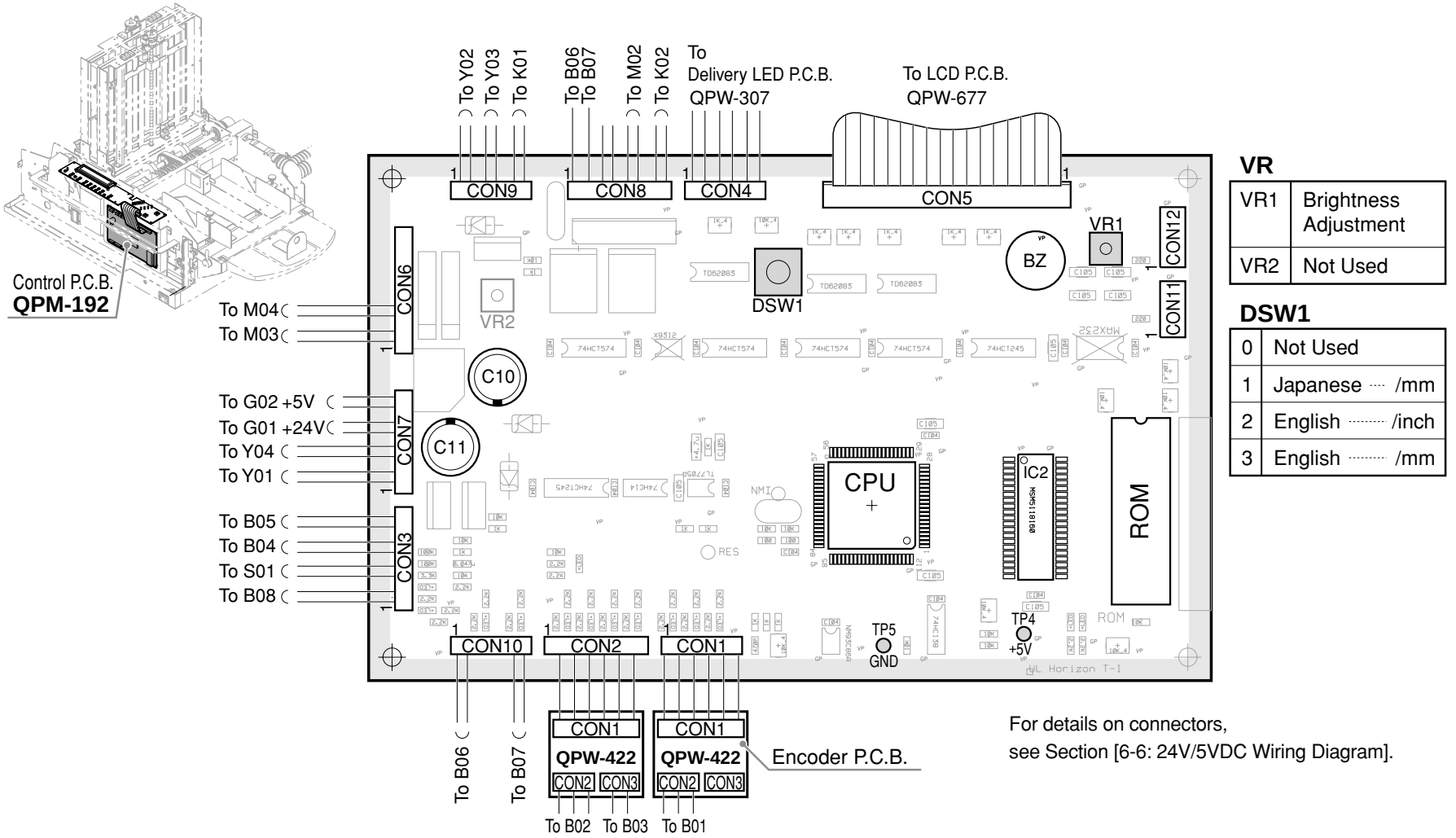
QPW-307

Delivery LED P.C.B.

P.C.B. for the LED that guides the delivery roller position.

6-4 Control P.C.B. QPM-192

6-4-1 QPM-192 P.C.B. Layout



VR

VR1	Brightness Adjustment
VR2	Not Used

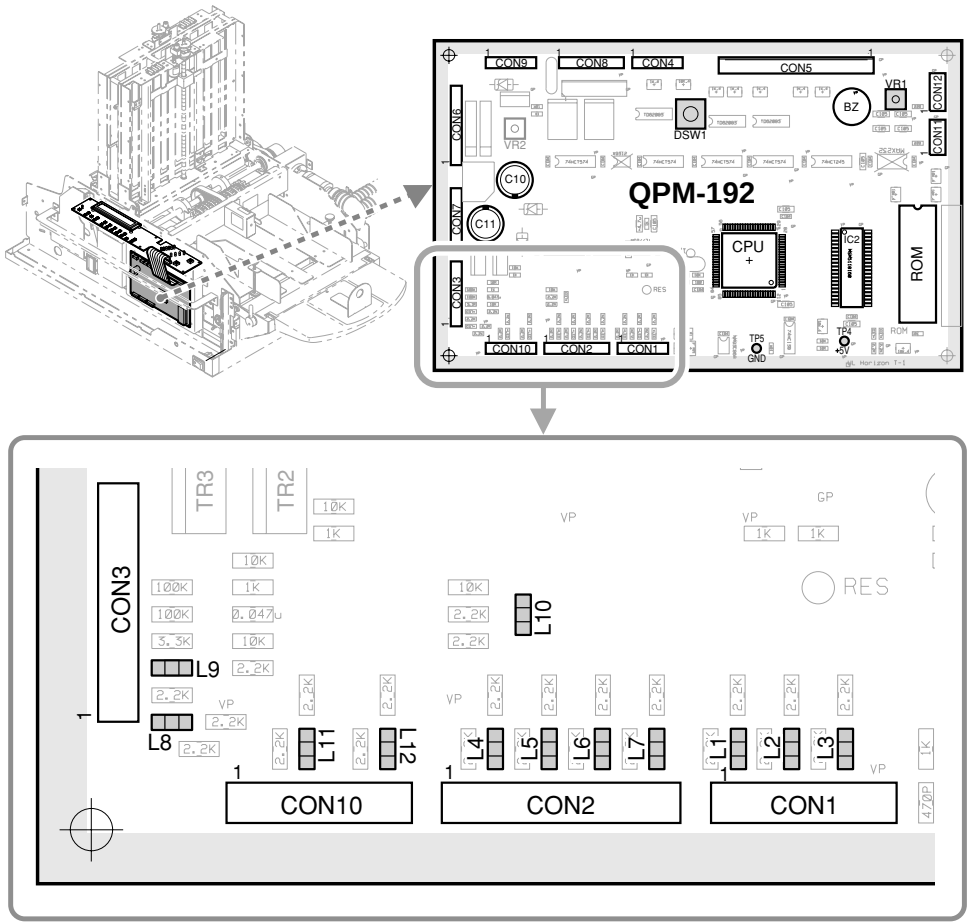
DSW1

0	Not Used
1	Japanese ···· /mm
2	English ····· /inch
3	English ····· /mm

For details on connectors,
see Section [6-6: 24V/5VDC Wiring Diagram].

6-4 Control P.C.B. QPM-192

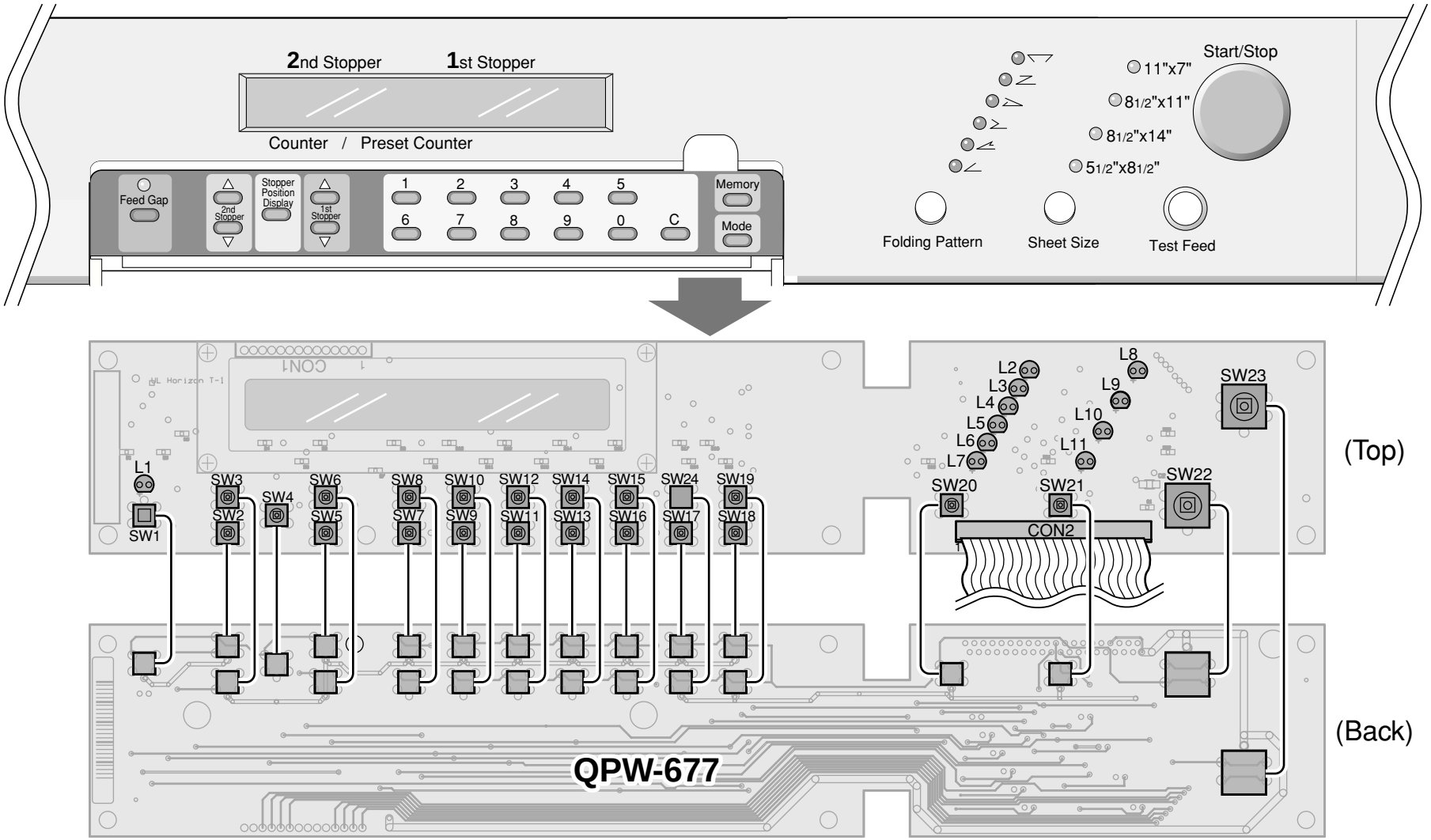
6-4-2 QPM-192 LED Layout



LED Illuminating Condition

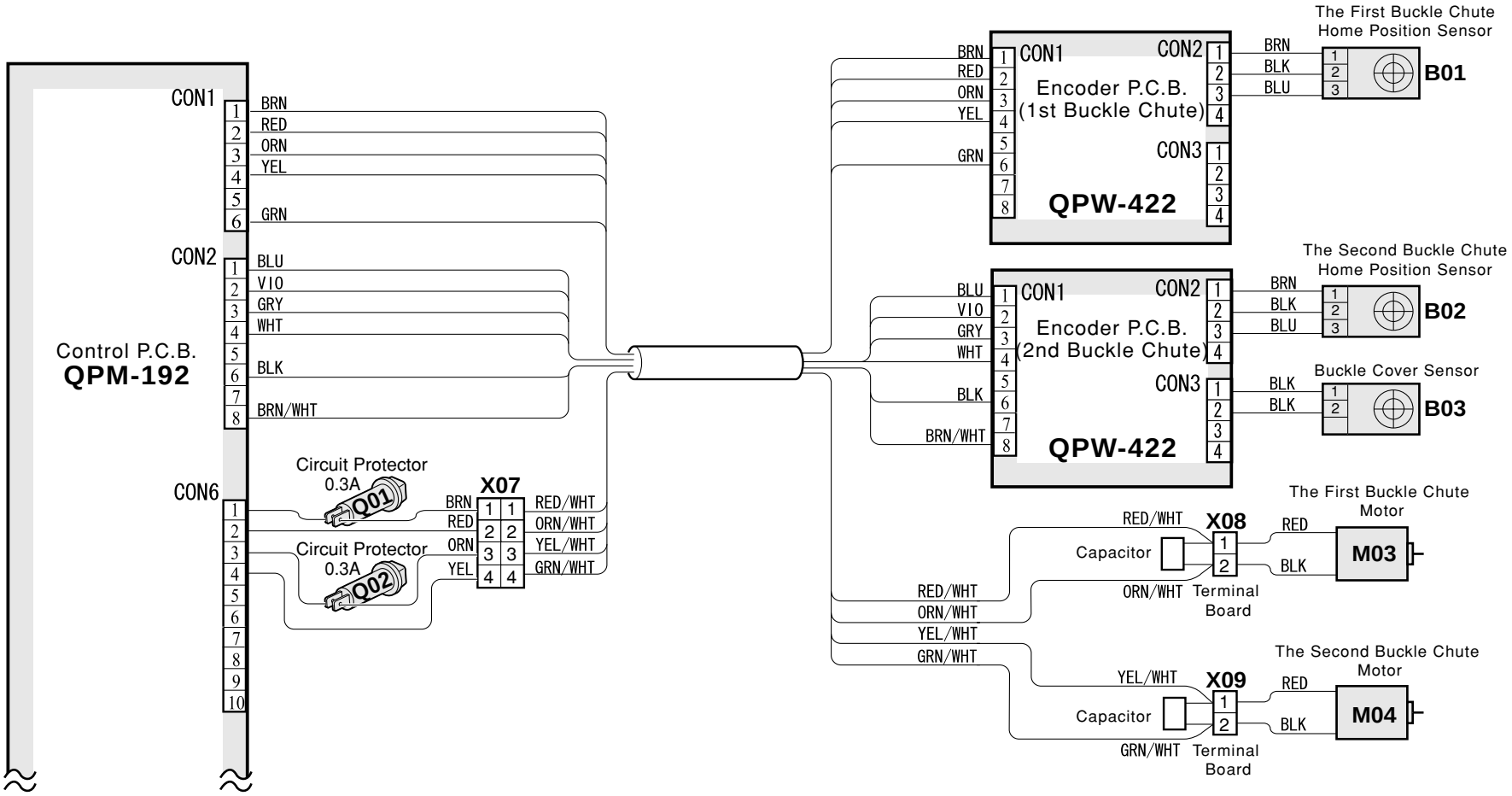
L1	Sensor A on the first stopper encoder P.C.B. QPW-422 does not receive light.
L2	Sensor B on the first stopper encoder P.C.B. QPW-422 does not receive light.
L3	The first buckle chute home position sensor B01 is ON
L4	Sensor A on the second stopper encoder P.C.B. QPW-422 does not receive light.
L5	Sensor B on the second stopper encoder P.C.B. QPW-422 does not receive light.
L6	The second buckle chute home position sensor B02 is ON
L7	Buckle cover sensor B03 is ON.
L8	Sheet detect sensor B08 is ON.
L9	Table upper limit switch S01 is ON.
L10	Count sensor (receiver) B05 does not receive light (sheet is passing.)
L11	Sheet upper limit sensor B06 is ON.
L12	Table lower limit sensor B07 is ON.

6-5 LCD P.C.B. QPW-677



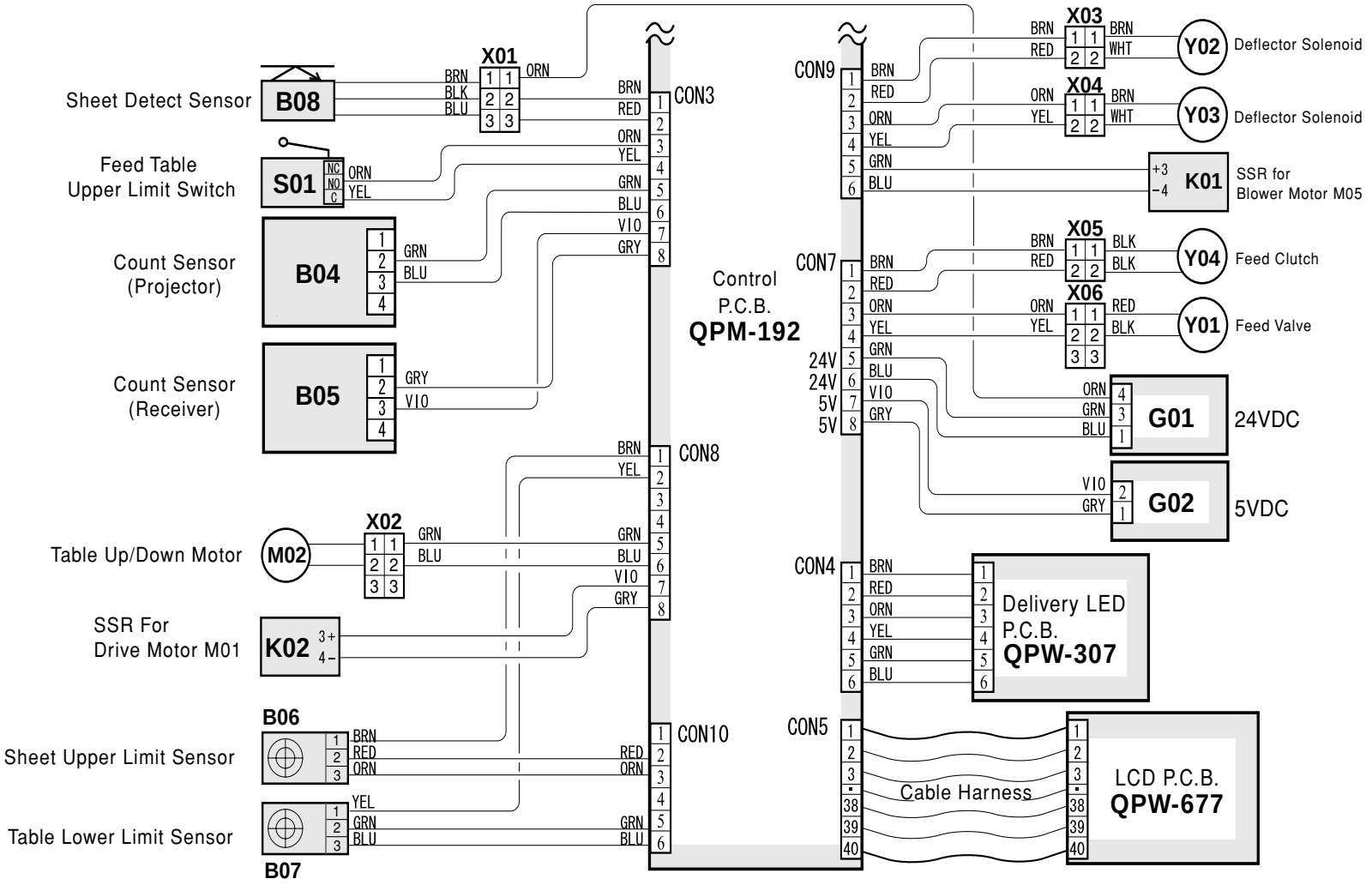
6-6 24V/5VDC Wiring Diagram

6-6-1 Buckle Chute Section



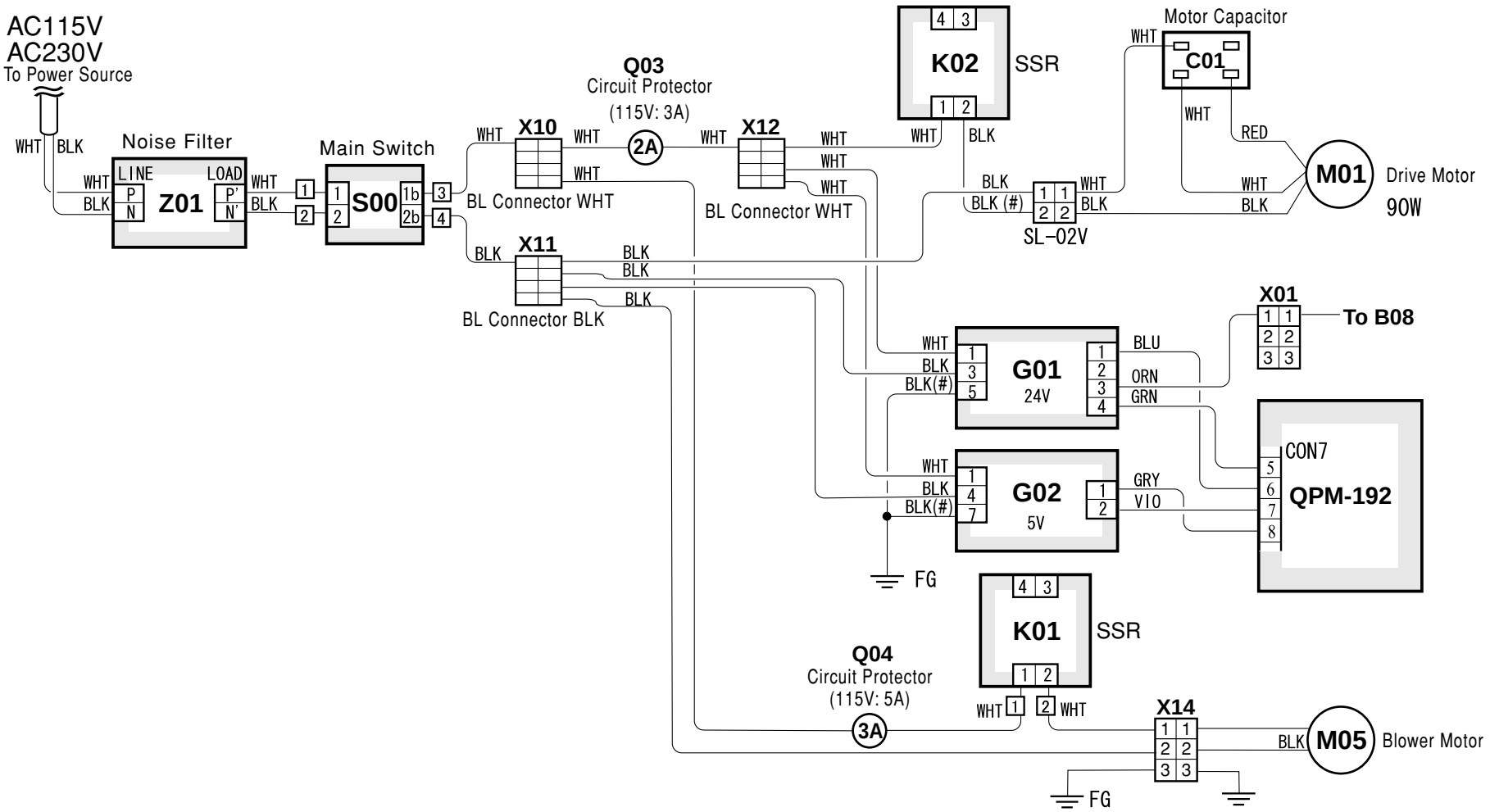
6-6 24V/5VDC Wiring Diagram

6-6-2 Main Section



6-7 Power Circuit Wiring Diagram

(#) means that gray label is sticked on the wire.



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